

# The United States MILLER

Published by E. HARRISON CAWKER. { Vol. 14, No. 4.}

MILWAUKEE, FEBRUARY, 1883.

{Terms: \$1.00 a Year in Advance  
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## THE STEVENS NON-CUTTING ROLLER MILLS

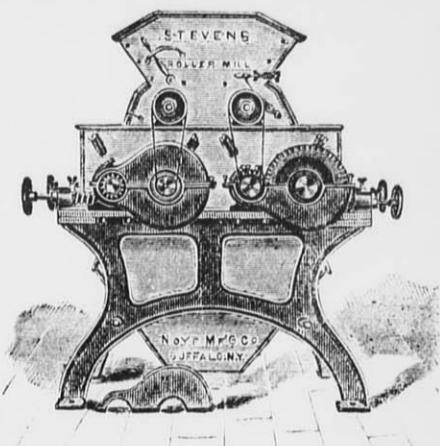
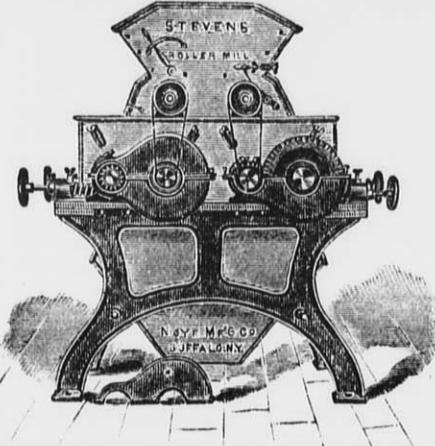
are remarkable for simplicity, durability, ease of adjustment, high quality of product, adaptability for both spring and winter wheat reduction, and for great capacity.

*Send us your address for copy of our New Catalogue which will be ready in a few days.*

The Jno. T. Noye Manufacturing Co.

[Please mention the United States Miller when you write to us.]

BUFFALO, N. Y.



## A COMPLETE ROLLER MILL OUTFIT

For Mills of 30 to 70 Bbls. capacity in twenty-four hours, can be secured by ordering Gray's Patent Noiseless Belt Roller Mills as combined in the new Four Break Gradual Reduction Machine, designed especially for use in small mills. This machine contains the celebrated **GRAY'S PATENT ROLLER MILLS**, in combination with the necessary Scalping Reels and Elevators, to make the reductions and complete the separations essential to the most perfect system of roller milling. This machine, in connection with Gray's Combined Roller Mills and Bolting Reels for reducing the middlings, forms a complete roller outfit, which is compact, efficient and cheap. For particulars, prices, etc., address:

[Mention this Paper when you write to us.]

EDW. P. ALLIS & CO., Reliance Works, Milwaukee, Wis.

## ODELL'S ROLLER MILL.

An Established Success.

We invite particular attention to the following

### POINTS OF SUPERIORITY,

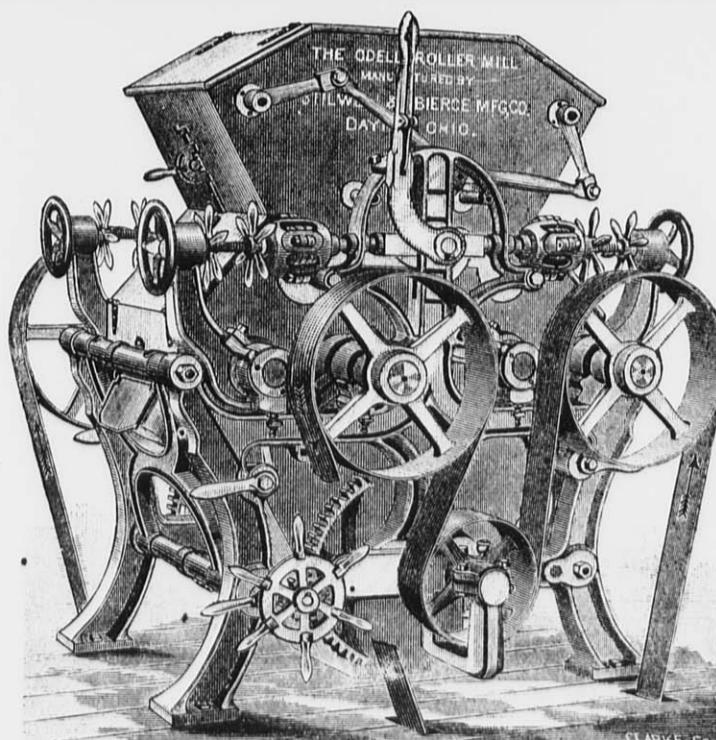
possessed by the Odell Roller Mill over all competitors, all of which are covered by Letters Patent, and cannot be used on any other machine.

1. It is driven entirely with belts, which are so arranged as to be equivalent to giving each of the four rolls a separate driving belt from the power-shaft, thus obtaining a **positive differential motion**, which can not be had with short belts.

2. It is the only Roller Mill in market which **can be instantly stopped without throwing off the driving belt**, or that has adequate tightener devices for taking up the stretch of the driving-belts.

References and letters of introduction to parties using Odell Rolls will be furnished on application, to all who desire to investigate the actual work of these splendid machines.

Circular and Prices on Application to Sole Manufacturer,



3. It is the only Roller Mill in which **one movement of a hand-lever spreads the rolls apart and shuts off the feed at the same time**. The reverse movement of this lever brings the rolls back again exactly into working position and **at the same time turns on the feed**.

4. It is the only Roller Mill in which the movable roll-bearings may be adjusted to and from the stationary roll-bearings **without disturbing the tension-spring**.

5. Our corrugation is a decided advance over all others. It produces a more even granulation, **more middlings of uniform shape and size**, and **cleans the bran better**.

WE USE NONE BUT THE BEST

Ansonia Rolls!

STILWELL & BIERCE MANUFACTURING CO.,

DAYTON, OHIO. U. S. A.

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THE UNITED STATES MILLER.

THE LARGEST MILL FURNISHING ESTABLISHMENT IN THE WORLD.

RELIANCE WORKS,

EDW. P. ALLIS & CO. Prop's.

MILWAUKEE, WIS., U. S. A.

SOLE MANUFACTURERS OF

Gray's Patent Noiseless Belt

ROLLER MILLS

WITH

Wegmann's Patent Porcelain Rolls.

Unexcelled for reducing Middlings to Flour.

Far ahead of Smooth Iron or Scratch Rolls and entirely superceding the Mill Stones for this purpose.

Read the Following Letters.

S. E. P. ALLIS & Co., Milwaukee, Wis.

Gentlemen:—We are very much pleased with the whole eight set of Porcelain Rolls you put in our Mill. The two double set sent us soon after starting up last fall, we put in place of two run of stones for grinding our coarse

ings. We find the Flour from the Porcelain Rolls much more evenly granulated and sharper and cleaner than that we got from the stones, besides the second or middlings are much better, being almost entirely free from germs and not

sky.

Yours Truly,

KIDDER BROS.

ention this Paper when you write to us.]

MESSRS E. P. ALLIS & Co.

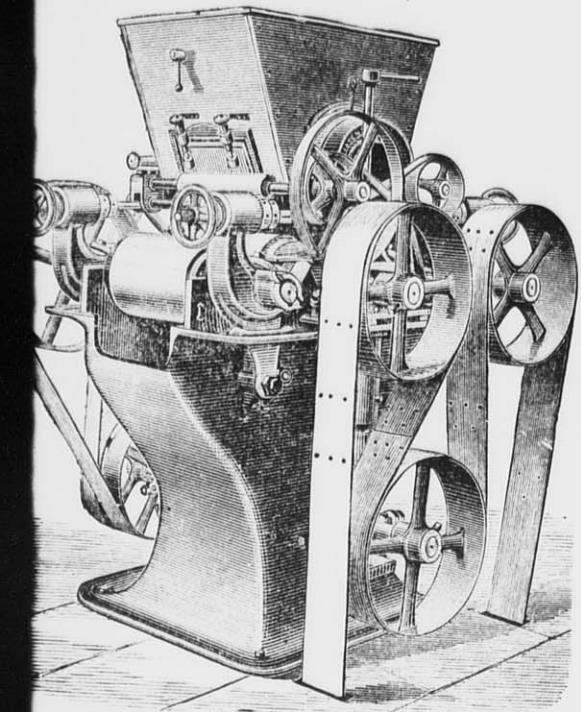
Gentlemen:—You ask how I like the Porcelain Rolls as compared with Mill Stones. I have been using the original Porcelain Gear Machines for five years and became convinced a long time ago that Mill Stones could not produce as satisfactory results.

I am now operating your Improved Machine of increased size with nice adjustments, working without noise with Gray's Patent Belt Drive. The Flour it produces is beautifully grainy and strong and its capacity two or three times more than the old Gear Machine.

It runs splendidly, gives no trouble, consumes less power than Mill Stones, dispenses with costly stone dressing and for reducing Middlings and soft branny residuums and tailings is unequalled by any Machine, iron or stone, at least this is my opinion after five years of practical experience.

Yours truly,

JOHN HARVEY,  
Head Miller Kings Co. Mills, Brooklyn, E. D.

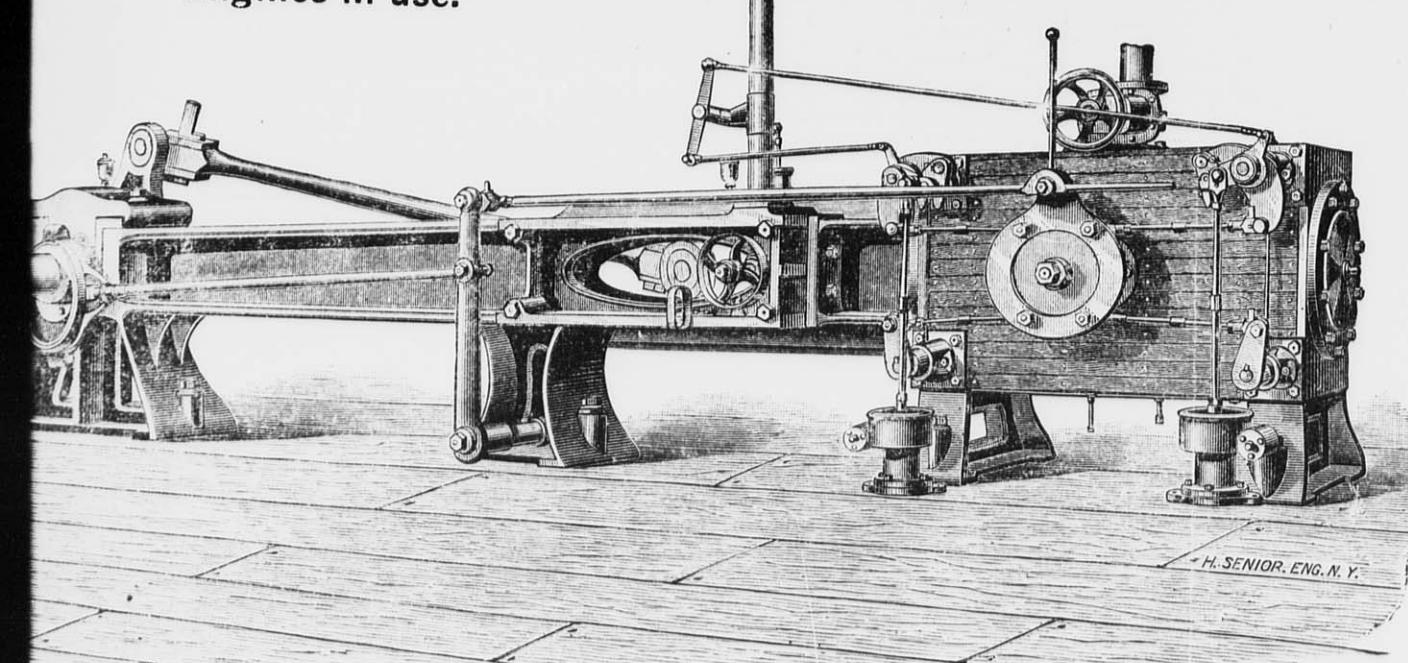


ALSO SOLE MANUFACTURERS OF THE CELEBRATED

EYNOLDS'

Over Three Hundred of these  
Engines in use.

CORLISS ENGINES



These Engines are especially adapted for use in Flouring Mills—being unsurpassed in Simplicity, Durability and ECONOMY OF FUEL, and far ahead of any other

Automatic Cut-off Engines.

Send for catalogues of Roller Mills, Flour Mill Machinery, Saw Mill Machinery, Reynolds' Corliss Engines, etc., etc., address:

Edw. P. Allis & Co.,

MILWAUKEE, WIS.

The following is a partial list of Flouring Mill owners who are using the Reynolds' Corliss Engines.

Kern...	Milwaukee, Wis.	Albert Wehausen...	Two Rivers, Wis.	L. H. Lanier & Son...	Nashville, Tenn.
le Mill Co...	Red Wing, Minn.	Green & Gold...	Faribault, Minn.	Wells & Nieman...	Schuylerville, N.Y.
Mills...	Milwaukee, Wis.	Meridan Mill Co...	Meridan, Minn.	Grundy Centre Milling Co...	Grundy Centre, Iowa.
our Mills...	Milwaukee, Wis.	Townshend & Proctor...	Stillwater, Minn.	B. D. Sprague...	Rushford, Minn.
Mill Co...	Winona, Minn.	Sooy & Brinkman...	Great Bend, Kansas.	The Eisemeyer Co...	Little Rock, Ark.
ashburn & Co...	Anoka, Minn.	Frank Clark...	Hamilton, Mo.	A. W. Ogilvie & Co...	Montreal, Canada.
d. Schurmeier & Smith...	St. Paul, Minn.	N. J. Sisson...	Mankato, Minn.	Geo. Urban & Son...	Buffalo, N. Y.
listman & Co...	La Crosse, Wis.	Jas. Campbell...	Mannannah, Minn.	A. A. Taylor...	Toledo, O.
ee Milling Co...	Milwaukee, Wis.	C. J. Coggins...	Wauconda, Ill.	Pindell Bros Co...	Hannibal, Mo.
Douglas...	Chicago, Ill.	J. J. Wilson...	Algona, Iowa.	Kehlor Milling Co...	East St. Louis, Ill.
er Milling Co...	Stillwater, Minn.	Ames & Hurlbut...	Hutchinson, Minn.	Walsh, DeRoo & Co...	Holland, Mich.
ost...	Winona, Minn.	Lincoln Bros...	Olivia, Minn.	Goodlander Mill & Elevator Co...	Fort Scott, Ks.
hibald & Co...	Dundas, Minn.	Northey Bros...	Columbus Junction, Iowa.	W. Seyk & Co...	Keweenaw, Wis.
ary & Co...	Sacramento, Cal.	Bryant Mill Co...	Bryant, Iowa.	Topeka Mill and Elevator Co...	Topeka, Kan.
& Mairs...	Hasting, Minn.	David Kepford...	Grundy Centre, Iowa.	Strong Bros...	Graceville, Minn.
te & Bro...	Manitowoc, Wis.	Waterbury & Wagner...	Janesville, Minn.	C. A. Roberts...	Fargo, D. T.
anka Mill Co...	Minnetonka, Minn.	W. A. Weatherhead...	South Lyons, Mich.	Coman & Morrison...	Fox Lake, Wis.
ene & Co...	Faribault, Minn.	Geo. Bierline...	Waconia, Minn.	J. G. Schapp...	Grand Island, Neb.
ow & Co...	Salina, Kansas.	James McCafferty...	Burton, Mo.	Fred Schumacher...	Akron, Ohio.
& Maes...	Faribault, Minn.	Geo. P. Kehr...	Menomonee Falls, Wis.	Warren Mfg. Co...	Warren, Minn.
ll Co...	Owatonna, Minn.	Winona Mill Co, compounding their present 24x60 Winona M.	Forest, Minn.		
	New Ulm, Minn.	Forest Mills Co...			

# The United States

# MILLER



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## A CALIFORNIA ROLLER MILL.

SPERRY & CO'S 1000 BARREL MILL AT STOCKTON, CALIFORNIA.

The leading industrial improvement in the city of Stockton, Cal., at the present time, is that of the new flouring mill erected by the well-known firm of Sperry & Co. The firm consists of S. W. Sperry and Mrs. Austin Sperry, widow of the late Austin Sperry, the former partner, whose interest she retains. The entire business is under the able management of S. W. Sperry, who is assisted by two of his sons, George B. and Austin B. Sperry. The San Francisco office is in charge of Mr. James Hogg and Mr. James W. Sperry, another son of Mr. S. W. Sperry. The firm started in business in 1852 with a small mill for grinding barley. That mill was subsequently replaced by the one recently burned down. The present admirable structure is located on the site of the burned mill. It is the result of thirty years' assiduous attention to business, and such honorable dealing as has ensured the present success. The entire plant will cost \$200,000. It is a beautiful and substantial brick building, the plans of which were drawn with the intent of combining economy in space with adaptability to the contemplated work, and were the result of a long practical experience in milling matters. It is not only a success on the score of complete utility, but it is also an ornament to the city of Stockton. It possesses the advantage of being on the margin of tide water communication with San Francisco, and its close proximity to railroad transportation, affords it ample opportunities for shipment by either vessel or car. The building is divided into three departments. The first, which is the mill proper, is 50x100 feet, and five stories high. Strength and solidity have been carefully attended to in its construction, and a rigid supervision of the material has been exercised during the entire progress of the work. The walls are thirty inches thick for two stories up; above that they drop off one brick for each story. They are laid in mortar and cement. The second department is occupied by the cleaning machinery and is 40x100 feet, including the packing-room, and is three stories high. The third or warehouse department is 117x100 feet, and two stories high. The ground on which the building stands was laid in concrete two and a half feet thick, and upon this solid formation the foundation was laid and the structure erected. This concrete was extended from the line of the building to the curb, on both Beaver street and Weber avenue, affording a sidewalk twelve feet in width on each of them. In the mill building the stairway to all the floors is placed in one corner of it, where it will not interfere with any of the milling operations. There are dividing walls between the different departments, the passages through which are provided with iron doors, making each division safely isolated from the others in case of fire. The entire lot of ground is 200 feet square, and a new warehouse will soon be built to cover the remainder of the whole lot. The architects are Percy & Hamilton, of San Francisco, and their work reflects much credit on them. The brickwork and building was done by Confer Bros., of Stockton, California. The mill furnishers were Edw. P. Allis & Co., of Milwaukee, Wis.

**THE MILL BUILDING—FIRST FLOOR.** All the lower floors are laid in cement marked in squares in imitation of stone flagging the cement being granite-like in hardness. In the engine room there are four tubular boilers made of the best material; each 54 inches in diameter, and 16 feet long, containing 40 tubes of 3/4 inches diameter. The engine is a Corliss, with an extra heavy

bed and a cylinder 26x48 inches. It is of 350 nominal horse-power, with a working capacity of 500. It was built by Tatum & Bowen, of San Francisco. The boiler and engine room is 50x50 feet, and 18 feet high, well lighted and with excellent ventilation. The smoke stack is 120 feet high by 54 inches in diameter. The main line of shafting connects with the engine and extends through the basement room. It drives all the machinery by a 26-inch double leather belt, which wraps the pulley, which is 17 feet 6 inches in diameter, and 28 inches face in the basement room, and also wraps the pulley on the fifth floor, and is 150 feet long. It is of the best oak-tanned leather, and is a very creditable specimen of the workmanship of L. P. Degen, No. 13 Fremont street, San Francisco. This main line of shafting drives directly, and indirectly by means of counter shafts, the following machinery, which is lo-

ed by this arrangement, and additional stability is given to the floors of the building. These girders are made of two pieces of Oregon pine 6x16 inches, and bolted together. They possess greater strength than if made from one piece of the same dimensions. On this floor are four lines of rolls, consisting of 38 pairs of corrugated iron rolls, Gray's patent, and are the best roller mills manufactured. They are driven by double leather belts, and are very easy of adjustment. The belts can be tightened without removing them from the macnines. There are also 18 pairs of smooth iron rolls, and 6 pairs of porcelain rolls, of Wegeman's patent, in Gray's frames. There are six run of French buhr stone, four feet in diameter, run at the velocity of 180 revolutions per minute. There are three flour conveyors overhead, immediately below the lower bolting chests, which are on the floor above, which take the material in

under the reels by means of upright shafts geared to horizontal shafts. All the elevators, 42 in number, receive their motion from shafts in this room; they all head on this floor, and are driven by a horizontal shaft extending through the mill. There are 12 scalping reels built on iron shafts, with iron spiders to which are attached the wooden reel ribs. These reels are clothed with polished steel wire cloth of different numbers to grade the material as wanted. The scalpers grade the material to the break rolls. The main driving belt wraps the 72 inch pulley in this loft. There is also one "Improved Martin Centrifugal Flour Dressing Machine" here. The horizontal line of shaft at the head of the bolt chests on this floor is driven by means of a cross line geared to main elevator line. The horizontal line, mentioned above, carries head pulleys of five break elevators. The six break elevators being located

on the other line of shaft in the centre of the mill. The dust room is on this floor; it is 13x80 feet. Under it are conveyors to gather the dust to prevent accumulation and to convey it to the reels set apart for handling it.

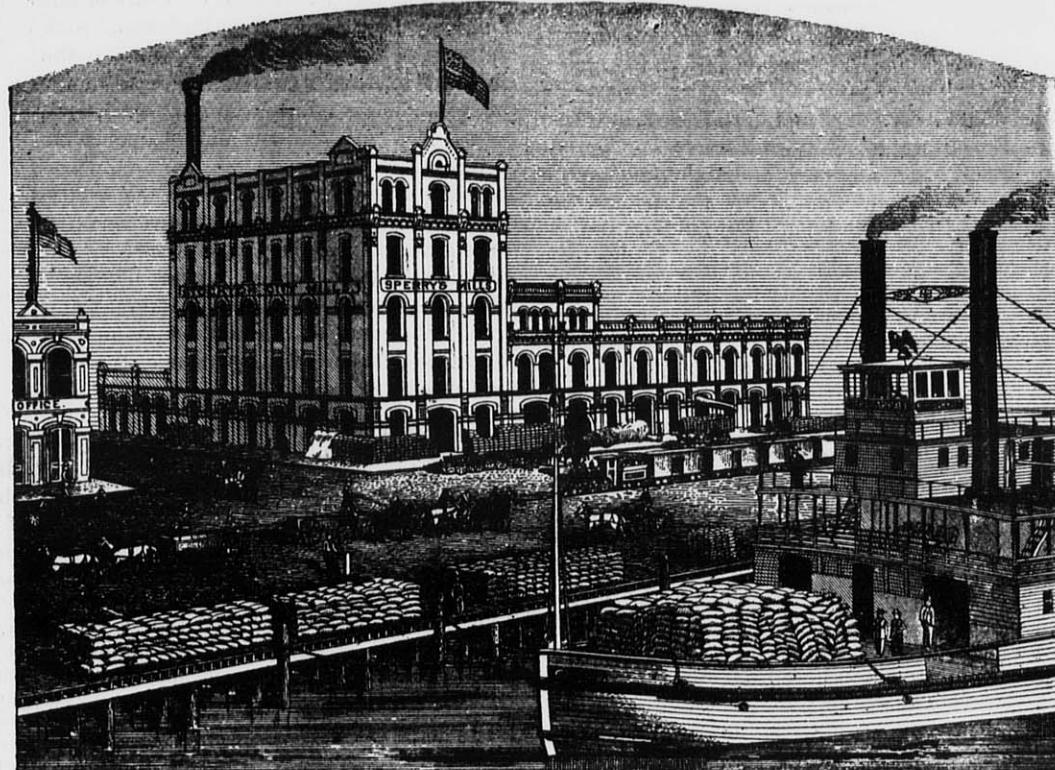
**CLEANING WORKS.**—The cleaning works are entirely separated from the mill. This department is 40x60 feet, and three stories high. In front is the packing room, 40x40 feet. There are three packers. The first floor is occupied by the wheat dumper and rougher. On the second floor there are two smutters made at the mill, and invented by O. F. Cook, the head miller. Also three Sturtevant exhaust fans, large size; one of which is No. 8, and two are 32-inch fans. There are three brush machines, of Richmond manufacture. The third floor contains elevators, separators, wetting conveyors, rolling screens and graders.

**WAREHOUSE.**—A large store-room occupies a portion of the space of the ground floor of this department; it is 100x150 feet, and fifteen feet high. It is capable of storing 5,000 tons of wheat. On the second story is a room of the same size, with a storage capacity of

20,000 barrels of flour.

Take the entire building through and through, it is the most complete and perfect mill building in the United States. The machinery embraces the latest patents and most recent improvements, and it is so arranged that when in operation the grain shall pass steadily onward without manual handling, through all the ramifications of the mill, until it is turned out at last in the highest known grade of flour, at the rate of 1,000 barrels per day of 24 hours.

**MACHINERY PROSPECTS FOR 1883.**—We present this week letters from over forty establishments engaged in manufacturing machinery, engines, boilers, tools and machinists supplies, representing several States, which have been written in answer to our special annual inquiry as to condition of business, progress during the past year, and prospects for the year before us. A general perusal of them shows that 1882 has been a signally prosperous year, and that confidence in trade for the present year is not lacking. Taken as a whole, however, prices of machinery and tools are lower than they were last January and the tendency is towards closer competition. Shops have enlarged their capacities to such an extent that, even should the demand during the year 1883 prove equal to what it was during 1882, (which at this writing seems unlikely,) customers generally will not have to wait any extra length of time to get their orders filled. One feature of interest is the fact that several manufacturers are having a foreign trade for their machinery as well as a good home demand.—*American Machinist*, January 20.



SPERRY & CO'S 1000 BARREL MILL AT STOCKTON, CALIFORNIA.

cated in various parts of all the departments, viz.: Six run of stone, 18 pairs of corrugated rolls, 18 pairs of smooth iron rolls; 6 pairs of porcelain rolls; 4 Gray's purifiers for middlings; 16 Smith's purifiers; 4 Martin's centrifugal reels; 5 Sturtevant fans, and 18 scalping reels. These machines will be noticed more fully in their respective locations. A counter shaft extends into the engine room, and is driven by a 26-inch double leather belt wrapping a 7-foot and 6 inch pulley with a 28-inch face. It runs 16 Gray's patent rolls, and the power is taken from the shaft to drive the machinery in the cleanings rooms. Cadwell's patent conveyors are on this floor with several dumps through which the grain is emptied from the sacks into them. They have a capacity for conveying 1,000 bushels per hour. They dry and wetting garners are based upon this floor. There are 6 garners, 8x18 feet, and 30 feet deep, which will hold 500 tons of wheat. These garners are built in the most substantial manner possible, and are strongly braced, and also strengthened by transverse iron rods. On this floor are located the foots of the six break elevators; and also of the elevators that take the product of the stones and smooth iron and porcelain rolls; which they receive by five conveyors located overhead. The barley room, also on this floor, is 40x40 feet. It contains one run of stone for grinding barley, and a crusher for crushing barley.

**SECOND FLOOR.** The upright columns on this floor upon which the girders rest that support the floor above, are capped with iron plates which run up between the sections of each girder, and the posts on the third floor rest upon them. All lateral motion is avoid-

elevators to bins over the flour-packers in the packing-room. These conveyors are driven by an upright shaft in front of the bolting chests, and which is extended to this floor for that purpose.

**THIRD FLOOR.**—There are five bolting chests on this floor, each containing 4 reels, 32 inches by 16 feet; they are clothed with silk ranging from 0000 to No. 15. Around each chest is a walk supported by iron brackets. Between the rear of chests and head of purifiers is a line of elevators used for handling all material of the mill. All spouts in this mill are shellaced to ensure steady run of material and to prevent choking. On this floor are 10 purifiers for middlings. Two are Gray's patent, made in Milwaukee, and 8 are Smith's patent, built in Jackson, Michigan. There is one "Improved Martin Centrifugal Flour Dressing Machine" on this floor; also a line of shafting for driving purifiers, from which line is another taken off at right angles for driving some of the machines on the floor above. There are in addition to the above-mentioned machines, two Sturtevant fans for sucking out light dust from the chop conveyors under rolls and stones.

**FOURTH FLOOR.**—In this room are 5 bolting chests, of 4 reels each, and of the same size, and clothed with silk as those before described. Then two more "Improved Martin Centrifugal Flour Dressing Machines" There are, also, two more Gray's and eight more Smith's purifiers. All conveyors in this mill are made by turning a wooden shaft five and a half inches in diameter, to which are attached galvanized iron conveyor floats.

**FIFTH FLOOR.**—On this floor is located all machinery for driving reels and conveyors

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PUBLISHED MONTHLY.

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MILWAUKEE, FEBRUARY, 1883.

St. Louis has a grain elevator capacity of 10,450,000 bushels. Another million bushel elevator is now being built in East St. Louis.

The Quarterly Report of the United States Treasury Department shows that during the three months ending Sept. 1882, bolting cloth to the value of \$121,156 was imported against \$95,087 in corresponding months in 1881.

We have received a very useful little work from the publishers, John W. Wiley & Son, entitled "Saw Filing," by Robert Grimshaw, Ph. D. It is designed as a practical aid to those who use saws for any purpose, and we believe fills the requirements.

THE annual statement of the Western Manufacturing Mutual Insurance Co., of Chicago, shows that they have on hand a surplus of \$410,281.11 over all liabilities. The Illinois Mutual Insurance Co., of Alton, Ill., shows a surplus of \$262,378.74.

THE first shipment of bulk grain ever made from Savannah was cleared a few days ago for Liverpool, consisting of 20,000 bushels of Tennessee corn; and now that Savannah has a large grain elevator, it is believed that she will be able to develop quite an important grain export trade.

THE death of Clark Mills, the distinguished American sculptor, took place a few days ago at Washington. Mr. Mills, who was born in Onondaga county, N. Y., in 1815, began life as a millwright, and then became a plasterer. He began experimenting in plaster busts, and eventually achieved fame as a sculptor.

DISASTERS by fire and floods have been numerous of late, and co-equal with those on the seas. The floods in Germany are estimated to have destroyed property to the extent of twenty millions of dollars. Other European countries have also suffered heavily from overflows. In our own country fire has been the chief destroying element, and has lost the insurance companies the past year about ninety millions of dollars.

THE Postmaster-General issued an order Jan. 30, forbidding the delivery of money orders and registered letters to Fleming & Merriam, R. E. Kendall & Co., Charles J. Heney & Co., Benlett, Holtzmann & Co., and Cudworth & Co., all of Chicago, and nominally engaged as grain and stock brokers, under which cover it is alleged they receive money for investment, making little or no return therefor.

The Iowa Millers' Fire Insurance Co., at their meeting Jan. 17, in Des Moines, Iowa, re-elected the old officers. The Finance Committee reported that, instead of the usual board rate of 4½ per cent., for Iowa mills, this Association had for seven years carried a risk of \$1,400,350 at an average of 1½ per cent., and for 1882 at less than ½ of 1 per cent., thus saving to millers nearly \$195,923. The total losses paid last year were \$4,146.48. Total expenses, \$3,366.

At the annual meeting of the *Miller's Mutual Ins. Co.*, of Wisconsin, held at Milwaukee in the Empire Mill Office, Jan. 17th, the following directors and officers were re-elected: E. W. Arndt, President, J. L. Clement, Vice President, S. H. Seamans, Treasurer, John Schuette, Secretary. The Company has had remarkable success so far. In the brief time of its existence it has issued over 200 policies, which covers over \$250,000 risk and having no more than \$3,000 on any one mill. The capital consisting of premium notes and cash has already accumulated to the amount of nearly \$53,000, and we think that there are few Companies that can make such a good showing in such a short period.

DURING 1883 the Canadian Pacific Railway Company intend advancing their line from Indian Point Farm, about 940 miles west of Winnipeg, 330 miles further on toward the Rocky mountains. The Selkirk branch, 23 miles, will be completed, and connection will be made from Emerson to the southwestern branch, a distance of 22 miles. On the eastern division the road will be completed 130

miles west of Callender, and it is likely the Nipissing and Algoma branch, from Wahniptic river to Algoma, about 110 miles, will be finished. The line eastward to Thunder Bay will probably be completed to a point about 40 miles east of the Nepongan river. Work will also be begun at all available points along the north shore of Lake Superior, and will be pushed on vigorously.

## FLOUR-MILL PERFORMANCES.

Messrs. Prescott, Scott & Co., of San Francisco, have deduced from a number of examples the following as the average performance of flour-mills in this country per single run of 4-foot stones:

Number of revolutions of the stones per minute.....	250
Bushels of wheat ground per hour.....	20
Barrels of flour dressed per 24 hours.....	110
Percentage of extra flour.....	0.68
Horse-power per single run and dressing machinery.....	45
Pounds of coal-screencings per barrel.....	45
Cost of fuel per barrel in cents.....	18
Pounds of coal per horse-power per hour.....	5
Horse-power required to make one barrel per day.....	0.5

## MILL-PICKS

Are usually made of cast steel hardened and tempered in anthracite forges. If the tool is of English steel, it should be forged at a moderate red heat, but hot enough to scale. It should not be hammered after it has lost its redness. Heat to a low red heat; then for hardening dip the tool in salt water slightly tepid, and temper it to a brown. If American chrome steel is used, heat to a yellowish color for forging, to a low red for hardening, and quench right out. Mill-picks should weigh from 2 to 3 lbs., and in grinding them the pressure should be moderate and plenty of water should be used. Do not grind to a featherage.

## MILLERS' NATIONAL ASSOCIATION.

[Special Dispatch to THE UNITED STATES MILLER.]

CLEVELAND, O., Jan. 31.—The Miller's National Association met here to-day in special session, called by the Sub-Executive Committee. Nineteen States and about one-tenth of the milling interests of the country are represented. President George Bain, of St. Louis, presided, and Secretary S. H. Seamans, of Milwaukee, was at his post.

After much discussion various resolutions were adopted, the substance of all of which is that the Sub-Executive Committee, which has served since 1877, was empowered to act in its discretion to protect members of the Association by settlement or litigation in patent suits. The Secretary was authorized to receive new memberships on payment of \$5 per run. It was decided to hold a grand reunion next June at some place to be designated by the President and Secretary, which will probably be New York. A premium of \$1,000 was offered for any invention by which bran or ship-stuff can be compressed so as to effect a saving of 5 cents per 100 pounds.

The session will be continued to-morrow.

## THE SEEDING OF WINTER WHEAT.

The returns of December relative to winter wheat and rye show a very small increase of area. In the South there is little increase, except in Virginia, North Carolina and Texas. Kentucky and West Virginia have enlarged their area, and Kansas has made some increase.

In some parts of the Middle States the autumn was somewhat too dry, but the crop is generally in good condition. It is looking fairly well throughout the South, though the sowing has been later than usual. In parts of Texas the weather has been too dry, and the pressure for cotton picking has been an obstruction in some districts. Condition is good throughout the West—nearly up to the full standard of full vitality.

The Hessian fly attacked early sown wheat in Delaware. The fly has injured some fields in the Shenandoah Valley, and in south-west Virginia. Frequent mention is made of similar damages in Tennessee and Kentucky; in Ohio such reports are less frequent, yet the fly has made its appearance at many points. In Indiana, Illinois, Missouri and Kansas early sown wheat has been attacked, but the injury has not generally been severe, and is nowhere considered irreparable.

In the more southern States seeding was not completed on the first of December.

## TO PREVENT RUST.

It is said that the best plan for preventing tools from rusting is the simple preparation employed by Prof. Olmstead, of Yale College, for the preservation of scientific apparatus, and which he long ago published for the general good, declining to have it patented. It is made by the slow melting together of six or eight parts of lard to one of rosin, stirring till cool. This remains semi-fluid, ready for use, the rosin preventing rancidity and

supplying an air-tight film. Rubbed on a bright surface ever so thinly, it protects and preserves the polish effectually, and it can be wiped off nearly clean, if ever desired, as from a knife-blade; or it may be thinned with coal oil or benzine. A writer in *Forest and Stream* says that if oxidation has begun, no matter in how slight a degree, it will go on under a coating; it is therefore essential that the steel surface be both bright and dry when filed over.

## INCREASE OF BRITISH IMPORTS OF BREAD-STUFFS.

THE total net imports of wheat into the United Kingdom in the year 1882 were 1,550,000 quarters greater than in 1881, and the farmers' deliveries of home-grown wheat during the year were just about the same as in 1881 (7,600,000 quarters), but as the total stocks of wheat show an increase of only 600,000 quarters the difference is ascribed by *Beerbohm's Corn Trade List* to an increased consumption of wheat in the United Kingdom in the past year, which has been induced by the low prices of wheat as compared to other foodstuffs. This increased consumption has been at the rate of from 3 to 4 per cent. over that of the preceding year. It is believed in London that this increased consumption of wheat is more largely due to the scarcity and high prices of potatoes than to any other one fact. Prices of potatoes in London are from 50 to 100 per cent. higher than last year, and throughout the kingdom this is the rule, except in some districts in Ireland, where they are more than double the price of last year. If the scarcity of this one important edible root has caused such an increased consumption of wheat in the United Kingdom it would necessarily have the same effect on the continent, where the potato crop last year was almost a complete failure. It is therefore to be reasonably presumed that the consumption of wheat on the continent has been increased quite as much if not more than in the United Kingdom, and that, notwithstanding the increased importations of wheat this year by Germany and France, their stocks in store have not increased in even the same proportion as those in the United Kingdom.

[Translated for THE UNITED STATES MILLER.]

## MILLSTONE, OR BUHR-STONE.

This interesting form of silica, which occurs in great masses, has a texture essentially cellular, the cells being irregular in number, shape and size, and are often crossed by thin plates or coarse fibres of siles. The buhr-stone has a straight fracture, but it is not so brittle as flint, though its hardness is nearly the same. It is feebly translucent; its colors are pale and dead, of a whitish, greyish, or yellowish cast, sometimes with a tinge of blue.

The buhr-stones usually occur in beds, which are sometimes continuous, and at others interrupted. These beds are placed amid deposits of sands, or argillaceous and ferruginous marls which penetrate between them, filling their fissures and honey comb cavities. Buhr-stones constitute a very geological formation, being found in abundance only in the mineral basin of Paris, and a few adjoining districts. Its geological position is well ascertained: It forms a part of the locustine or fresh water formation, which, in the locality alluded to, lies above the upper eocene gypsum, and the stratum of sand and marine sandstone which cover it. Buhr-stone constitutes, therefore, in the locality in which it is found, the uppermost solid stratum of the crust of the globe; for above it there is nothing but alluvial soil, or diluvial gravel, sand and loam.

Buhr-stones sometimes contain no organic forms; at others they seem as if stuffed full of fresh water shells, or land-shells and vegetables of inland growth. There is no exception known to this arrangement; but the shells have assumed a siliceous nature; and their cavities are often filled with crystals of Quartz. The best buhr-stones for grinding corn have about an equal proportion of solid matter and of vacant space. The finest quartz of them is upon the high ground, near *La Ferte sous Jouarre*, France. The stones are quarried in the open air, and are cut out in cylinders from one to two yards in diameter, by a series of iron and wooden wedges, gradually but evenly inserted. The pieces of buhr-stones are afterwards cut into parallelopipeds called panes, which are bound with iron hoops into large millstones. These pieces are exported chiefly to England and America. A coarse conglomerate sandstone or breccia is, in some cases, used as a substitute for buhr-stones; but it is a poor one.

A WEALTHY NATION.—Says the Chicago *Journal of Commerce*: It is hardly understood why a few people in this country have so suddenly become rich. It is because the country is doubling in value every ten years, is doubling in the value of everything in it, and a few men happen to be in possession of the main arteries of trade and manufacture; and as the land of every town doubles in value, so does the railroad and telegraph right of way double each ten years, and will continue to do so until the country is fully occupied. Every foot of land in the new West, every railroad and telegraph and manufactory will be worth double in 1890 what it was in 1880. Only get hold of as much as possible of the material of this country and hold it. If the grumbler would do this instead of finding fault with owners of railways because their property doubles and doubles again in value. Opening mines and laying railroads is not always a sure road to wealth, but the mines which chance to be bonanzas and the roads which chance to be the great highways will give their holders fortune. Go in, don't stop to grumble!

## RECENT MILLING PATENTS.

The following patents were issued Jan. 2, 1883.

*Grinding Mill*, Devore & Winger, Freeport, Ill.*Millstone Driver*, Henry Heard, Greensboro, Ga.*Bush Box for Millspindles*, Henry Heard, Greensboro, Ga.*Wheat grader & Cockle separator*, Judson N. Merchant, Bloomingdale, Mich.*Wheat scouring apparatus*, V. X. Stiefenhofer, South Easton, Pa.

The following patents were issued Jan. 9, 1883.

*Grain-cleaner and separator*, John M. Lawrenson, Moreland, Pa.*Grinding Mill*, Lawrence White Iron Portable Grist Mill Co., Boston, Mass.

The following patents were issued Jan. 23, 1883.

*Millstone driver*, Amos Callahan, Maryville, Tenn.*Grain weigher and tally*, Georg Kleth Jr., Freedom, Ill.

THE AMERICAN NEWSPAPER DIRECTORY for 1882. Published by N. W. Ayer &amp; Son, Philadelphia. 8vo. cloth, 800 pages. Price \$3.00.

This book embraces within its handsome covers a great amount of useful information. It contains very full statistics with reference to the names, circulations, advertising rates, etc., of all the newspapers published in the United States and Canada. It also gives the population and principal products of every state and county in the United States and Canada; the population of every town having one or more newspapers; a list of all towns with a population of over 5,000, and in addition a variety of political statistics.

## A DISTURBING ELEMENT.

The fact that some members of Boards of Trade will appeal to the Courts to save them from the results of their own speculation when they happen to be on the wrong side of the market, has a tendency to depress speculative trading. On this subject *Bradstreet's*, of Jan. 27, says:

The corn market has been excited and has experienced some rather violent fluctuations as the result of the speculations in Chicago, which have taken the shape of a corner in the January option but which received a setback on Wednesday by the most prominent short-seller, (John B. Lyon,) appealing to the courts to save him from the results of his own speculations, by restraining anybody from calling on him for margins, or from buying in the corn on his contracts, and making him pay the difference, as he would be obliged to do under the rules of the Chicago Board of Trade. The question as to whether the injunction of the court will be sustained in law and by higher judicial authorities is one of more importance than the mere settlement of this one speculation in corn. If the power of the Chicago Board of Trade to discipline its members or to expel them for disregard of its rules can be restrained by the courts, the Board of Trade has no functions to perform, and there would be no reason for its existence.

THE Northwestern Lumberman of Chicago has issued a special "Saw Mill Edition," containing a full and complete directory of the saw mills of America, and also the manufacturers of everything required in the successful and economical manufacture and manipulation of lumber. By its tables we find that the total number of saw mills in the United States is 15,020; in Quebec, Ontario and Manitoba, 657. The largest number in any one State, is 1,291, in Pennsylvania; New York comes second with 1,069, and Indiana third with 1,006. Michigan has 983, Georgia 820 and Ohio 796. The number credited to New England is as follows: Maine, 464; New Hampshire, 260; Vermont 331; Massachusetts, 91; Rhode Islands, 47; Connecticut, 119. These figures, the Lumberman explains, are exclusively saw mills, the census of 1880 giving 25,708 saw and shingle mills in the country, including everything that bore any semblance to a saw mill, whether stationary or portable. The directory, as published by the lumberman, is a large though very conveniently arranged book, of over 200 pages, and is sure to be very popular among the class for whom it is specially intended. It is a grand work and its preparation shows great enterprise on the part of its publishers.

## A MILLING SCHOOL.

The necessity of a Technical School for Millers in the United States is now pretty generally acknowledged by thinking millers. In these days of such radical changes in the machinery and processes of milling, the owner of a mill does not like to risk his valuable property in the hands of unskilled and unlearned employees. A millowner goes to a millbuilding establishment of high reputation and says that he desires his mill fitted or refitted with the best machinery that money can buy, and capable of turning out, say 300 barrels of flour per day. The milling engineer makes his plans and completes the erection or change of the mill and turns over the completed work to the owner, after starting the mill and showing that, in the hands of a man educated to use the machinery and process it fulfills the letter of the contract. He pays the mill builder for his labor and machinery, and there the mill builder's responsibility ceases.

"Now comes the nip," as the Irishman said as he slid off the edge of a high roof. A mill of 300 barrels capacity per day will require, say 1,400 bushels of wheat which will cost, say \$1,400 per day for raw material. Now the quantity and quality of the flour made of this wheat will vary in price in proportion to the skill used by the operating miller. If the flour cannot be sold for more than the cost of the wheat, cost of manufacture, cost of wear and tear of machinery and fair interest on the money invested in the mill, the owner is not making a profit, and if less, he is *losing* money.

There are, it is true, times when a miller may lose money on account of the fluctuations in the market, but if he is a reasonably careful buyer and makes as good flour as *can be made* from the wheat used, he generally will make a profit. The great point, therefore, in which every mill owner is interested is, to secure a practical miller understanding the machinery and process used in his mill.

Where will he get him and be sure of it?

As matters are now, it is a game of chance. There are scores of good millers, but there are hundreds that are incapable of occupying the responsible position of head miller or second miller in a mill of 300 barrels capacity per day.

What can be done?

A technical school for teaching young men all that is useful and necessary in the operations of flour milling can be established. After completing their course in such an institution they should be obliged to pass a critical examination, not only as to generalities but as to details, and if a satisfactory examination was passed, the student should be awarded a diploma which should be a sufficient recommendation to any mill owner.

We have written and published many articles on this matter, and we are gratified to know that it is becoming a subject of serious thought to so many in the trade. We would not advise American millers to go to foreign countries to attend technical milling schools, as America rather leads the world to-day in the manufacture of flour. The best that can be done at present is to study well such books and papers as contain pertinent information—to secure situations in mills of established reputation, and to observe well.

If the Millers National Association does not take hold of this matter soon, the mill builders and mill furnishers will have an opportunity to establish an enterprise that will prove a lasting benefit to one of the foremost branches of industry in this country; and the milling press will, we think, without exception, do all in their power to help the matter along.

## THE "BISMARCK" FOUR-ROLLER BELTED MILL.

THE CASE MANUFACTURING CO. of Columbus, Ohio, have recently introduced on the market a four-roller belted mill which they have named the "Bismarck." The manufacturers in speaking of their "Bismarck" mill, say:

1st. It has a solid Iron Frame, strong, substantial and beautiful in design, with no wooden parts to shrink and swell.

2d. The Boxes in which the Journals of the Rolls run are wider than in any other Roller Mill now made, and using none but the best of babbitt metal, they are the truest running and most durable of any.

3d. The door for examining the stock and arrangement for leveling the Rolls is the perfection of simplicity and convenience.

4th. Our perfected "BISMARCK" Mill is dustless and noiseless and has the best arrangement in use for trammimg and oiling the Rolls and tightening the belts; every miller will appreciate these points who has had experience with Rolls that were dusty, noisy and inconvenient.

5th. The Belt Tightener is perfectly con-

structed and can be connected with the driving pulley at an angle of forty-five degrees, often saving the expense of a counter shaft in making connection. The most perfect differential speed is obtained by this tightening pulley. It is positive and certain. We have never heard of such a thing as a slipping belt on our Roll.

6th. It occupies less space and requires no stock hopper on top.

7th. By the simplest possible device the Rolls are thrown apart the entire length of the Roll, and when brought together again they come back to their exact position, so that no resetting is required, no loss of time in testing and handling material, but the same results as before are had at once without experimenting.

8th. We now mention that which more than all others is the essential thing in Roller Mills, viz: The Feed. In this particular and important feature our Roller Mill surpasses all others, and we wish to call special attention to it. Ours is an absolutely perfect Automatic Feed. We guarantee that millers using our Rolls need not give the least attention to the Feed, and that the stock on all the machines will *at all times* be distributed *perfectly even along the entire length of the Rolls*. It is the same feed as that used on our Purifiers by our "Perfect Feed Box," hundreds of which are in use on every make of Purifier. It starts and stops with the mill, cannot choke up or fail to feed and requires no attention but to be let alone.

## STEAM ENGINE ECONOMY.

The question of steam engine economy, which is being agitated in the columns of some of our contemporaries by writers who discuss it in a general way, is little benefited by such general discussions. When terms "less first cost," "less skill," "less cost of repairs," "extra boiler capacity required," "small powers" and "considerable powers" are used without direct qualification, definition or exemplification, they convey but little meaning. An engineer accustomed to build or use engines of 500-horse power or above, might consider "small powers" any way from one-horse power to 100 or 200-horse power, while to another the term "small powers" would convey the idea of engines from one to ten horse power, and a 100 or 200-horse power engine would rank under the classification of "considerable power." Similarly the term "less," as applied to "cost" "skill" and "repairs," may vary in the reader's or writer's mind within the limits of zero and infinity. When ideas or suggestions are based on such general terms as above, they are useless to any one, and the reader often having perused such articles, knows no more than he did before perusal; nor does he find anything which he can apply in practice.

When discussing the question of steam-engine economy, one must come down to figures; and if this cannot be done, little of real use can be achieved. The "less" must be qualified in dollars and cents, the ranges of horse power must be stated, and then there are at hand the data for comparison and discussion. Often the lack of experimental determination prevents one from coming down to exact figures; but the need, then, is not discussions and general assertions but *experimental determinations*. The very class of discussions which we would assail, serves to retard the institution of necessary experimental trials; for the air of wisdom, erudition and boldness assumed serve to mystify a large class, who would otherwise urge, and help to raise opportunity and funds, for experimental work.

The question of steam engine economy is fortunately one that, as a rule, can be settled with sufficient accuracy in any particular case; but each case must be considered as a special problem, to which the laws of engineering, of cost of production and attendance, and occasionally experimental trials must be applied; just as in the maintenance or design of a bridge. There are many who oppose algebraic methods of presentation, and some the use of higher mathematics, who indulge in the evil writing to which we refer. While we at all times favor the simplest mode of representation of a position, be it graphical or mathematical, there is a word to be said in favor of analytical methods, and that is that the writer has to come down to figures and close analysis. "Generalities" recede to the vanishing point.

The abuse to which analytical methods and formulae are subject is the wholesale and indiscriminate introduction of "constants," but any improper use of constants can be detected by any one comprehending

the mathematical demonstrations. The ablest and most satisfactory analysis of questions of steam engine economy are those that give definite replies to inquiries in dollars and cents. Steam engine economy is but one phase of the great general problem of all engineering, to obtain a given result for the least current expense in money. Such current expense includes of course, interest, repairs and depreciation of plant, cost of attendance and other current costs of production.

[Translated for THE UNITED STATES MILLER.]

## THE GRAIN TRADE IN POLAND.

There is a general complaint throughout the Polish provinces of the present depression in the grain trade. In many provinces, as for instance those of Lublin and Kielce, not only the export of grain has entirely ceased in the absence of buyers, but even speculators in the small towns, who otherwise supply the local consumption, have lost all enterprise in such a degree that the larger milling establishments and bakeries are unable to procure through them the necessary supply of grain. Generally when a small quantity of grain is wanted by the buyers the price offered is so low as to appear unacceptable to the producers. In consequence thereof the Polish papers are advising the grain producers to discontinue all sales for the present and await better times. This entire standstill in the grain trade has naturally a very depressing influence on social and business circles, and the intercourse between the population of the city and country has almost entirely ceased. The farmer has no money, can therefore make no purchases and business in cities is very dull.

The Russian grain dealers are likewise in despair. The early and very severe winter has interfered with their grain in transit. On the Volga an immense number of ships are frozen up and compelled to wait until spring for release. The enormous quantities of grain stored in the warehouses of St. Petersburg cannot be brought on board ships owing to the fact that the Neva is closed by ice. As far as possible, therefore, the railroad to Reval is utilized, but it will be but a short while, however, before even this harbor will be closed, and then there will be no possibility of bringing to the European markets any grain whatever from Russia. Even Odessa, although not directly incommoded by these climatic disadvantages, suffers, however, from the lack of sufficient supply by reason of the freezing up of the rivers from the north, on which she depends. *Der Oesterreichisch-Ungarische Mueller, January.*

## WHAT OF FIFTY YEARS?

Ten years ago there was no Centennial State, no millionaire in Colorado, no electric lights, no telephone or phonograph.

Fifteen years ago, and there were no railroads penetrating the Rocky Mountains, no palace sleeping cars in existence, no narrow gauge railroads or patent air brakes.

Twenty years ago, and there were but five railroads running to Newyork, and but three to London, and none west of the Missouri River.

Twenty-five years, and there was no ocean cable, no signal service, no telegraph or railroad crossing the continent, and no oleomargarine sold for creamery butter.

Thirty years ago, and it took sixty days to go from the Missouri River to the Sacramento, and not a white man found in that vast expanse, save it were a handful at the Holy City.

Thirty-five, and gold had not yet been found in the Sacramento, Pike's Peak not heard of, the silver mines of America were in Mexico and Peru, and men were yet sold as chattels.

Forty years, and coal oil had not been discovered in the bowels of the earth, the telegraph had not been invented, and not a railroad built west of the State of New York, and the Great New York and Erie was yet on paper.

Forty-five years, and there was no pathway across the continent of America, the Great Salt Lake had not been discovered, and not a hundred miles of railroad in the entire country, and but fifty in all Europe.

Fifty years ago, and there were no railroads, no gas lamps, no coal oil, no electric lights, no telegraphs, no public schools, no carbonates, and but little improvement. The cities of New York, Boston and Philadelphia were lighted with whale oil lamps and tallow candles, and all minor towns groped their ways in darkness.—*Denver Journal of Commerce.*

## THE PARENT WHEAT.

Grant Allen in Macmillan Magazine.

The nearest form of true wheat now found wild in the British Isles is the creeping couch grass, a perennials closely agreeing in all essential particulars of structure with our cultivated annual wheats. But in the south European region we find in abundance a large series of common wild annual grasses, forming the genus *Aegilops* of technical botany, and exactly resembling true wheat in every point except the size of the grain. One species of this genus, *Aegilops ovata*, a small, hard, wiry annual, is now pretty generally recognized among botanists as the parent of our cultivated corn. There was a good reason, indeed, why primitive man, when he first began to select and rudely till a few seeds for his own use, should have specially affected the grass tribe. No other family of plants has seeds richer in starches and gluten, as indeed might naturally be expected from the extreme diminution in the number of seeds to each flower. On the other hand, the flowers on each plant are peculiarly numerous; so that we get the combined advantages of many seeds, and rich seeds, so seldom to be found elsewhere, except among the pulse family. The experiment conducted by the Agricultural Society in their College Garden at Cirencester have also shown that carefully selection will produce large and rich seeds from *Aegilops ovata*, considerably resembling true wheat, after only a few year's cultivation.

Primitive men, of course, did not proceed nearly so fast as that. Of the earliest attempts at cultivation of *Aegilops* all traces are now lost, but we can gather that its tillage must have continued in some unknown western Asiatic region for some time before the neolithic period; for in that period we find a rude early form of wheat already considerably developed among the scanty relics of the Swiss Lake dwellings. The other cultivated plants by which it is there accompanied, and the nature of the garden weeds which had followed in its wake, point back to central or western Asia as the land in which its tillage had first begun. From that region the Swiss Lake dwellers brought it with them to their new home among the Alpine valleys. It differed much already from the wild *Aegilops* in size and stature, but at the same time it was far from having attained the stately dimensions of our modern corn. The ears found in the Lake dwellings are shorter and narrower than our own, and the spikelets stand out more horizontally, and the grains are hardly more than half the size of their modern descendants. The same thing is true in analogous ways with all the cultivated fruits or seeds of the stone age; they are invariably much smaller and poorer than their representatives in existing fields or gardens. From that time to this the process of selecting and amelioration has been constant and unbroken, until in our own day the descendants of these little degraded lilies, readapted to functions under a fresh *regime*, have come over to almost all the cultivable plains in all the civilized countries, and supply by far the largest part of man's food in Europe, Asia, America and Australia.

HOWES, BABCOCK & EWELL have been enlarging their works at Silver Creek, N. Y., by building a brick addition, 44x66 feet and five stories high, making their capacity double what it was a few years ago. They also contemplate in the near future the erection of an additional building for offices, etc. From a lengthy descriptive article in the Silver Creek *Local* we take the following relative to the growth of the concern: "What is now the EUREKA WORKS was established in 1826. While there have been several changes in its proprietorship, some of the members of the present firm have been identified with it from the first. The smut and separating machine was the only one then made. Everything except the iron work was done by hand, and from six to eight men employed. The pay roll must have been small compared with what it is now, for during the year just closed, \$44,582.01 was paid to workmen actually engaged in manufacturing, exclusive of the salaries to clerks and agents, and not including the extra force engaged in erecting the new building referred to above. Since then, other grain-cleaning machinery has been added from time to time, until the list now includes: smut and separating machine, brush machine, zigzag separator, warehouse separator, receiving separator, screenings separator, magnetic separator, Silver Creek flour packer, and Cranson's buckwheat shucker."

## UNITED STATES MILLER.

E. HARRISON CAWKER, EDITOR.

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MILWAUKEE, FEBRUARY, 1883.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. You will thereby oblige not only this paper, but the advertisers.

## Flour Mill Directory.

CAWKER'S AMERICAN FLOUR MILL DIRECTORY for 1882, was completed, ready for delivery February 1, 1882.

It shows that there are in the United States 21,356 flour mills and in the Dominion of Canada 1,488. The mills in the United States are distributed as follows:

Alabama, 388; Arizona, 17; Arkansas, 234; California, 209; Colorado, 52; Connecticut, 309; Dakota, 44; Delaware, 96; District of Columbia, 7; Florida, 81; Georgia, 514; Idaho, 18; Illinois, 1258; Indiana, 1163; Indian Territory, 3; Iowa, 872; Kansas, 437; Kentucky, 642; Louisiana, 41; Maine, 220; Maryland, 349; Massachusetts, 363; Michigan, 831; Minnesota, 472; Mississippi, 297; Missouri, 942; Montana, 20; Nebraska, 205; Nevada, 10; New Hampshire, 202; New Jersey, 445; New Mexico, 28; New York, 1942; North Carolina, 556; Ohio, 1462; Oregon, 129; Pennsylvania, 2786; Rhode Island, 47; South Carolina, 205; Tennessee, 620; Texas, 548; Utah, 129; Vermont, 231; Virginia, 689; Washington Territory, 45; West Virginia, 404; Wisconsin, 780; Wyoming, 3; Total, 21,356.

The directory is printed from new Burgeois type on heavy tinted paper and is substantially bound. It makes a book of 200 large pages. The post offices are alphabetically arranged in each state, territory or province. The name of the mill, the kind of power used and the capacity of barrels of flour per day of 24 hours are given wherever obtained which is in thousands of instances. This work is indispensable to all business men desiring to reach the American Milling Trade.

Price Ten Dollars per copy, on receipt of which it will be sent post paid to any address. Remit by registered letter, post-office money order or draft on Chicago or New York made payable to the order of E. Harrison Cawker, publisher of THE UNITED STATES MILLER, Milwaukee, Wis.

The census of 1880 gave Dakota a population of 135,000. The population January 1, 1883 is estimated to be 335,000. The number of homestead and pre-emption entries for the year 1882 was 33,000. Dakota is indeed growing.

We have recently received a neat catalogue from the E. T. BARNUM WIRE WORKS, Detroit, Mich. This house was established sixteen years ago in a very modest way, with only four or five employes. The Company has just moved into its new works, which are 140 x 600 feet, and three stories high. Six hundred hands are now employed, and a great amount of goods are turned out annually.

W. A. HALL, a miller and prominent citizen of La Porte, Ind., lost his life at the burning of the Newhall House in this city, Jan. 10, 1883. His partner, M. Weber, who was staying at the same hotel, was saved. These gentlemen came to Milwaukee for the purpose of purchasing mill machinery of Edw. P. Allis & Co. It was at first thought probable that Mr. Hall would recover, although terribly disabled, but after lingering a couple of days, he passed peacefully away.

FRANCE receives annually from England about twenty millions dollars for butter and cheese. This is suggestive to the American farmer. Many of our farmers know how to, and do make good butter, but there are many farmers who do not know how to, or at least do not make good or clean butter. If any one doubts this let him visit any city commission house, and he will find butter of every conceivable color, form and smell, and will lose his appetite for butter for a week at least. A little piece of bad butter will ruin the taste of the best bread that the skillful miller and baker can make.

GENERAL FRANCIS A. WALKER advocated before the Massachusetts teachers the other day the early teaching of the elements of science. He said: "I asked a pupil of one of our best public schools in Boston the other day, an excellent scholar, in the highest class, why it is that water rises in the pump, and this young person of fifteen years had not the vestige of an idea on the subject. No teacher during eight years of school had offered an explanation of the phenomenon or ever called attention to it. I hold that it should be made far more discreditable to a teacher to have pupils ignorant of the action

of atmospheric pressure, than it would be to have that pupil unable to spell 'relieve' or 'separate.' Create such a requirement on the part of the public, and you will soon have teachers who will find no difficulty in making their pupils understand the simple laws of physical and chemical action. Why should a child go on for years walking about on this earth, his eye falling every waking hour upon a multitude of objects, and never once be instructed regarding them?"

ILLINOIS CORN.—The latest returns made to the Illinois Department of Agriculture show that the aggregate corn crop of the State for the past year was 179,471,729 bushels, which, with the exception of the crops of 1881, 1874 and 1873, is the smallest since 1869. The average crop of the State for the preceding ten years is 224,939,367 bushels, or 44,467,638 bushels more than the late crop. The quality of the crop, except in the southern portion of the State, is much below an average. The corn acreage (7,471,950) of the State is much larger than last season, and the yield per acre a fraction larger.

## IOWA MILLERS' ASSOCIATION.

THE NINTH ANNUAL SESSION.

The ninth annual meeting of the Iowa Millers' Association was held at Des Moines, Jan. 17, 1883, President J. J. Snouffer in the chair. The President made a short address, lamenting the fact that an association of so much importance as the Millers' Association of Iowa should receive so little encouragement from its members and be so poorly attended. Their apathy and neglect cause the few faithful to come here year after year, and stand sentinel over their interests. Still good interest was taken by those present, and we hope profitably. The secretary was instructed to notify all delinquents to pay up their assessments, or drop their names from the list of members in sixty days.

On motion of Hammond, of Leonard, the Association proceeded to the election of officers for the ensuing year, which resulted as follows: President—J. J. Snouffer, Cedar Rapids; Vice President—D. B. Knight, Boone; Secretary and Treasurer—J. S. Lord, Ogden; Executive Committee—S. M. Smith of Guthrie, E. H. Brooks of Carroll, and J. R. Van Meter of Van Meter.

## DESTRUCTION OF THE NEWHALL HOUSE.

On the morning of January 10, 1883, the Newhall House in this city was destroyed by fire, involving a loss of hundreds of thousands of dollars, and seventy-five precious human lives. The building covered one-fourth of a block, and had a basement and six stories. In 43 minutes from the time the fire was discovered, the great building was nothing but a smouldering pile of ruins. There was not a single fire wall inside of the four outside walls. Considerable pains had been taken and considerable money expended for stand pipes, hose, chemical fire extinguishers, etc., but so far as we have been able to learn no effort was made to use any of the appliances in the building for putting out the fire.

It is useless now to talk about what might have been, so far as the lost are concerned, but it is the duty of the living everywhere to provide against the occurrence of such a calamity again.

Legislators everywhere, whether State or Municipal, should consider it their solemn duty to enact laws providing for the thorough inspection of all buildings used for public purposes such as hotels, theatres, lecture-rooms, hospitals, etc., and no building should be allowed to be used for public purposes deemed unsafe by competent inspectors. Buildings can be made fire proof, but it requires time, skill and money to erect such buildings, and in the past safety has been risked to save in cost.

The Palmer House in Chicago is constructed of fire-proof materials, and has stood practical tests, such as starting the fire in one of the rooms—all of which are like so many bank vaults—and letting it do its worst unassailed.

The Mitchell Bank Building and Chamber of Commerce Building in this City are supposed to be fire-proof.

The Manhattan Storage Company, New York, is now erecting, at the corner of Lexington avenue and Forty-second street, a building eight stories high, and fronting 200 feet on Lexington avenue, to cost \$500,000. It is designed to be fire-proof, and there will be no wood in the building, the elements of construction being simply iron, brick, cement and glass. The floors will be of cement throughout, each having a series of interior apartments, separated by thick walls.

There are numbers of large fire-proof buildings in various sections of the country, and so long as it is possible to build such buildings human life should not be endangered in "fire-traps."

[Written for the UNITED STATES MILLER.]

## EXAMINATION OF FLOUR FOR QUALITY AND ADULTERATION.

FLOUR should be examined physically, microscopically, chemically and practically by making bread.

The quality is best determined by chemical examination; adulterations by the microscope.

## PHYSICAL EXAMINATION.

APPEARANCE.—The flour should be quite white, or with the very slightest tinge of yellow; any decided yellow indicates commencing changes; the amount of bran should not be great.

FEELING.—There should be no lumps, or if there are, they should yield to slight pressure; there must be no grittiness, which shows that the starch grains are changing and adhering too strongly, and will make an acid bread. There should, however, be a certain amount of adhesion when a handful of flour is compressed, and if thrown against a wall or board some of the flour should adhere to it. When made into paste with water the dough must be coherent, and draw out easily into strings.

TASTE.—The taste must not be acid, though the best of flour is slightly acid to the test paper. An acid taste, showing lactic, or acetic acid, is sure to give an acid bread.

SMELL.—There must be no smell of fermentation or mouldiness.

The age of flour is shown by color, grittiness and acidity.

## CHEMICAL EXAMINATION.

1. AMOUNT OF WATER.—Weigh 1 gramme, spread it out on a dish, and dry either by a water bath or in a hot-air bath or oven, the temperature not being allowed to go above 200°. The flour must not be at all burnt, or much darkened in color. Weigh as soon as the flour is cold; the loss is the per centage of water.

The range of water is from 10 (in the dry flours) to 18 in the worst. The more water the greater liability of change in the flour, and, of course, the less is the amount of nutriment purchased in a given weight. If, then, the water be over 18 per cent. the flour should be rejected; if over 16, it should be unfavorably spoken of.

2. AMOUNT OF GLUTEN.—Weigh 10 grammes (or 100 grains if there are no gramme weights) and mix, by means of a glass rod, with a little water, so as to make a well-mixed dough; let it stand for a quarter of an hour in an evaporating dish; then pour a little water on it; work it about with the rod, and carefully wash off the starch; pour off from time to time the starch water into another vessel. After a time the gluten becomes so coherent that it may be taken in the fingers and worked about in water, the water being from time to time poured off till it comes off quite colorless. If there is not time to dry the gluten, then weigh; the dry gluten is rather more than one-third of the moist; 1 to 2.9 is the usual proportion; therefore divide the weight of the moist gluten by 2.9. If there be time, dry the gluten and weigh it. This is best done by spreading it out on a crucible-lid and drying it in the bath. The dry gluten ranges from 8 to 12 per cent.; flour should be rejected in which it falls below 8. If there is much bran it often apparently increases the amount of gluten by adhering to it, and should be separated if possible; in fact, the gluten, as thus obtained, is never pure, but always contains some bran, starch and fat. The gluten should be capable of being drawn out into long threads; the more extensible it is the better. It is always well to make two determinations of gluten, especially if there is any disputed question of quality.

3. AMOUNT OF ASH.—Take 10 grammes put into a porcelain or platinum crucible and incinerate to white ash. Weigh. The ash should not be more than 2 per cent.; if more probably some mineral substances have been added; it should not be less than .8, or the flour is too poor in salts.

The incineration of the flour requires a crucible and gas. It is difficult to do it over a spirit-lamp, as it takes a long time. A small charcoal fire will do quite well when gas appliances are wanting.

If the ash be more than 2 per cent., add hydrochloric acid, and see if there be effervescence (magnesium or calcium carbonate). Dissolve, and test with oxalate of ammonium, and then for magnesia, in the same way as in water. As flour contains both lime and magnesia, the quantity must be determined by

weighing the incinerated calcium oxalate, or the magnesium pyrophosphate.

If there is no effervescence add water and test for sulphuric acid and lime, to see if calcium sulphate (plaster of Paris,) has been added. In normal flour the amount of sulphuric acid is very small. Notice also, if the ash be red (from iron). If clay has been added, it will be left undissolved by acids and water.

If magnesium carbonate has been added, the ash is light and porous and bulky. An easy mode of detecting large quantities of added mineral substances is given by Redtenbacher; the flour is strongly shaken with chloroform; the flour floats, while all foreign mineral substances fall. This is a very useful test.

If the quantity of water be small, the gluten large, and the salts in good quantity, the flour is good, supposing nothing is detected on microscopic examination. But in all cases it is well, if time can be spared, to have a loaf made.

PRACTICAL TEST BY BAKING.—Make a loaf and see if it is acid when fresh and how soon it becomes so, if the color is good and the rising is satisfactory. Old flours and flours in a changing state do not rise well, give a yellowish color to the bread, and speedily becomes acid. Excess of acidity can be detected by holding a piece of bread in the mouth for some time, as well as by test-paper.

TEST FOR ERGOT.—There is no very good test for ergot when it is ground up with the flour. Lanceau's plan is to make a paste with a weak alkaline solution; to add dilute nitric acid to a slight excess, and then alkali to neutralization, a violent red color is said to be given if ergot is present, which becomes rosy-red when more nitric acid is added, and violet when alkali is added. Wittstein considers this method imperfect, and prefers trusting to the peculiar odor of propylamine (herring-like smell,) developed by liquor potassæ in ergotated flour.

THE MICROSCOPICAL EXAMINATION is directed to determine the relative amount of flour and bran, the presence of fungi or acari or the fact of adulteration by mixing of other grains.

## EFFECTS OF SPOILED BREAD ON THE ANIMAL SYSTEM.

The "Oest. Landw. Wochenschrift" publishes the results of a series of experiments in regard to the effects on men and animals of moulded bread from which we make the following extracts. A cavalry regiment stationed in Oran in Algeria was served with bread, that showed black and orange colored spots of mould, within 48 hours after the baking. The soldiers refused to use this bread, but gave some of their horses a little of it to eat. These horses in a short time after having eaten only half a kilogram of this bread showed symptoms of a severe poisoning, such as colic vertigo, drowsiness &c. A thorough microscopic examination of the bread indicated that the species of mould, which formed a speckled black coating was *Ascophora Nigrans*, while the other one forming light orange colored spots was *Oidium Aurantium*. Further more it appeared on cutting the bread through that the fungus-cells had existed in the flour, which consequently was spoiled before its transformation into bread. Meguin believes that both kinds of fungi had an equal share in causing the symptoms of poisoning which occurred.

## A MACHINE FOR PICKING COTTON.

Mr. Ransom, statistical agent for South Carolina describes a cotton-picking machine, and believes, from its success in a recent field trial, that the inventor, Mr. E. B. Hazleton, of Charleston, has solved the problem of picking cotton by machinery. The implement somewhat resembles a long wagon on two wheels, from whose naves motion is conveyed by a chain band, horses or mules furnishing the motive power. The pickers are toothed steel disks revolving between two wooden disks; the latter prevent unopened bolls, foliage, etc., from entanglement, while the fibers of the blossom, dropping even but slightly between, are caught, drawn entirely in, and taken cleanly from the boll by the teeth of the swiftly turning metal. A revolving brush removes from the teeth the fibers, which fall upon an endless apron and are conveyed to the body of the machine. As the machine moves forward, a V-shaped device converges the plants to the pickers. The shaft on which the latter revolves is inclined in such a way that the blossoms at any distance from the ground are reached. Motion is also conveyed to brushes on the front of the implement, by which sand and dust are removed from the plant.

## ROLLER MILLS.

BY THEODORE VOSS. (LONDON.)

## THEIR PRESSURE AND LEVER ARRANGEMENT.

(Continued from January number.)

To find the *percussive work* which was necessary to crush a grain of wheat, a weight of  $\frac{1}{2}$  lb. was allowed to fall from different heights on a grain of wheat, laid between two steel plates, and it was found that a height of 1 in. was generally sufficient to cause a rupture in the grain.

In order, therefore, to find the necessary pressure for fluted or smooth rollers of certain dimensions, we must first ascertain how long the particle remains in contact with the working surfaces of the rollers, or how many grains are in contact at the same time. This can easily be done in the following manner:—

Supposing  $O^1$  and  $O^2$  in the accompanying engraving to be the centres of two rollers of 9 in. diameter by 15 in. long, and  $f$  is the point where the grain comes into contact with both working surfaces. Then in  $c$ , on centre line  $O^1 O^2$  the contact may be said to cease, because beyond  $c$  the distance of the two rollers increases again.

Then as soon as we know the size of the granules, which are to be treated between the rollers, and as soon as we set the rollers to a certain distance,  $a b$ , we can easily ascertain the length of  $c f$ , that is the length of contact.

For instance, it is well known that the *average thickness* of a grain of wheat is  $\frac{1}{8}$  in., and as already mentioned, 1-16th inch may be taken as a suitable distance for the first break. Therefore we have  $a b = 1-16$  in.;  $a c = c b = 1-32$  in.;  $d f = f e = 1-16$  in.;  $o_1 e = o_2 d = o^1 b = o_2 a = 4$  in.; and  $c f^2 = o f^2 - o^2$

$$c f = \sqrt{o f^2 - o^2}$$

$$c f = \sqrt{(4\frac{1}{2} + 1-16) - (4\frac{1}{2} + 1-32)^2} = \sqrt{20.8104 - 20.5313} = 0.2851$$

$c f = 0.533948$  ins. — length of contact.

By multiplying this with 15ins, the length of the rollers, we find the area of contact surface = 8.00922ins.

Now if these first break rollers are smooth we may take it that there are three grains at the same time in contact, say one grain of wheat in point  $c$  under a pressure of say 22lb, one in the middle between  $c$  and  $f$  under a pressure of say 11lb, and one in point  $f$ , just beginning contact as yet without pressure. This would leave sufficient freedom between the grains to avoid undue compression. Lengthways over the surface of the roller we may take it that one grain nearly touches the other, or that about four grains lie per inch, say 60 grains in each row. We have, therefore, two rows of sixty grains each, under pressure at the same time; and if the rollers would revolve very slowly, a pressure of  $60 \times 22 + 60 \times 11 = 1980$  lbs would have to be supplied against the roller surface, say 990lbs per bearing.

But as a matter of fact the rollers work *percussive*, with a sudden pressure, that is, the roller surfaces move with a great velocity against each other, taking between them and shattering the wheat grains or other material.

The velocity with which the roller surfaces approach each other during their contact with the grinding material, can be ascertained in the following manner:—

Supposing the above-mentioned rollers of 9in. diameter revolve at a speed of 200 revolutions per minute, then we find with reference to fig. 1 the velocity  $v$ , in the direction of the tangent, of a point on the roller surface

$$v = \frac{3.14 d n}{60} \text{ where } d = 9 \text{ in.} = \frac{3}{4} \text{ ft}$$

$$\text{therefore } v = \frac{3.14 \times \frac{3}{4} \times 200}{60}$$

$$v = 7.854 \text{ ft}$$

Now in order to find in any point the velocity  $w$  in the direction of  $o_1 o_2$  we have the well known relation

$$w = v \sin x$$

where  $x$  the angle of the radius of the investigated point with  $o_1 o_2$ . In our case, we want to know the velocity with which the two roller surfaces approach each other in the point of contact, that is for  $x = m$ .

In order to ascertain this angle  $m$  we know that  $c f = 0.533948$  and  $o f = 4.5625$  in., therefore

$$\sin m = \frac{0.533948}{4.5625} = 0.11703$$

$$\text{and } m = 6^\circ 43' 10.45'$$

$$\text{therefore } w = v \sin m$$

$$w = 7.854 \times 0.11703$$

$$w = 0.91915362 \text{ ft.}$$

If, therefore both rollers revolve at the same speed, as is usual for cracking wheat, we have in point  $d$  and point  $e$  an opposite velocity of 0.019 ft., therefore, a total velocity of 1.888 ft. per second.

As before mentioned, Professor Kick found that  $\frac{1}{2}$  lbs. falling through one inch was sufficient to crush one grain of wheat, and we know therefore that this weight had acquired a velocity,

$$v = \sqrt{2 g h}$$

$$v = \sqrt{2 \times 32.187 \times 1-12 \text{ ft.}}$$

$$v = 5.3645 \text{ ft.}$$

when it struck the grain.

If this falling weight had only the speed of 1.838ft., as in the smooth rolls, we should have to use a greater weight before we could produce the same effect as before.

Now the actual energy of a moving body is  $\frac{G v^2}{2 g}$  where  $G$  represent its weight,  $v$  its velocity, and  $= 32.18$ , the acceleration of gravity.

We have, therefore, in our case, in order to find the greater weight moving at less speed which is able to crush one grain of wheat:

$$G_1 v_1 = G_2 v_2$$

$$\frac{2 g}{2 g} = \frac{G^2 \times 1.838^2}{G^2 \times 5.3645^2}$$

$$G_2 = \frac{1}{2} \times 5.3645^2$$

$$G_2 = 4.2593 \text{ lbs.}$$

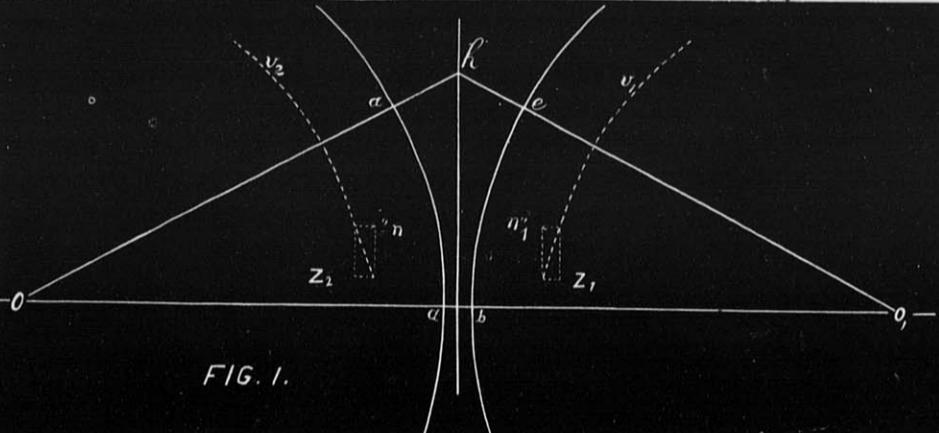


FIG. 1.

Therefore, if the rollers were arranged in a vertical position, one above the other, the weight of the top roller would become useful for supplying the crushing pressure, and if we take the weight of a roller of 9 inches diameter and 15 inches long to be equal to 250 lbs., including shaft, wheel, &c., this weight would supply the necessary *percussive* pressure for  $\frac{250}{4.2593} = 58$  grains.

This occurs *very often* in such rolls, especially when the feed becomes *uneven*, as shown in fig. 3, or when the rolls run empty. Also if the bearings of horizontal rolls are

differential speed, and *fine semolina*, with rolls set at 1-128in. distance, required 400lbs. per bearing.

It give these pressures as the result of very carefully conducted experiments with 9in.x 15in. rollers, and invite milling engineers and millers to test their accuracy. It is obvious that it is of the greatest importance not to put greater pressure on the rolls than is absolutely necessary. *Every pound of unnecessary pressure is a direct loss of power*, because it increases the friction in the bearings and consequently causes increased wear in the bearing surfaces.

This wear in the bearing surfaces has a very great influence on the proper distance between the rollers, as well be seen from the following facts:

Supposing two rolls are arranged horizontally, as shown in fig. 2, and the bearing of roller B is pressed against roller A by means of pressure springs, then, as soon as the rolls are working and the feed is passing between them, the shaft will be pressed towards the outer bearing surface, and there will be a small free space between the shaft and the

useful as part of the necessary crushing pressure. Therefore less pressure is required for the top bearing, and consequently less friction produced. The following numbers will further illustrate this:

Supposing a roller of 9 in. diameter by 15 in. long weighs 250 lbs., and a pressure of 500 lbs. per roller is required to crush the middlings, then, if the two rollers are arranged horizontally, each bearing will be exposed to a pressure of  $\frac{500 \times 250}{2} = 375$  lbs., and a corresponding amount of friction will be thereby caused.

If these same rollers are, however, arranged vertically, the weight of the top roller, 250 lbs., becomes *useful* and only 250 lbs., pressure is required for the top roller, to create the necessary pressure of 500 lbs.

The bottom bearings are exposed to the same pressure as in the horizontal arrangement, viz, 375 lbs. each.

Therefore, whereas in the horizontal rolls 1,500 lbs. (four bearings with 375 lbs. each) cause a corresponding amount of friction, only 1,000 lbs., (two bottom bearings of 375 lbs. each, two top bearings of 125 lbs. each), are thus acting in the vertical rolls.

The vertical arrangement has also the advantage of requiring small floor space and presenting better access to its working parts. Horizontal rolls may draw in the feed a little easier, but their scrapers are very inaccessible. Moreover, as the feed can be quite satisfactorily supplied to such vertical rolls, their advantage of using *less power* will ultimately bring them to the foreground.

This refers, however, only to vertical roller mills with two rollers. Three rollers arranged in vertical line generally combine too many disadvantages with their few good points, and it would therefore be unwise to prefer them to horizontal rolls.

It is generally urged in favor of "three" roller mills that the pressure of the top and bottom roller annihilate each other, and that therefore the middle bearing is not exposed to any pressure. Consequently, it is said, only *four* bearings are subjected to pressure and cause friction, against *eight* bearings in a corresponding horizontal roller mill.

This is, however, only partly the case, because generally the pressure of the top roller differs widely from that of the bottom roller. Nevertheless it must be admitted that probably less power is required for "three" roller mills than for a horizontal "four" roller mill of the same capacity.

In spite of these important advantages of "three-high" roller mills—viz., small motive power and small number of bearings—they are much inferior to horizontal rolls with regard to their pressure adjustment and the desired *constant* distance between the rolls. "Three-high" roller mills are in most cases employed in such a manner that the same kind of feed is passed through the top pair as through the bottom pair.

[TO BE CONTINUED.]

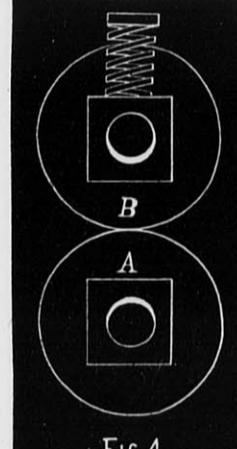
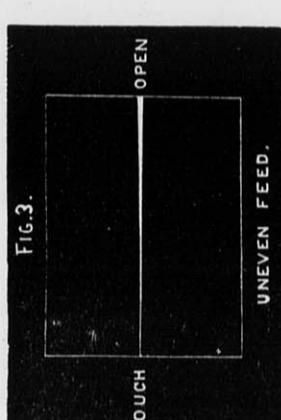
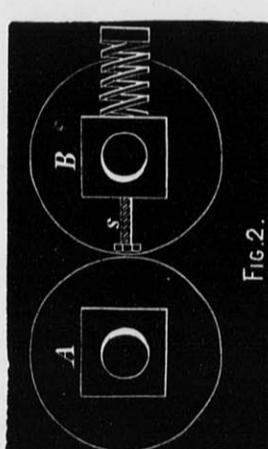


FIG. 4.

There are about 120 grains in contact with both working surfaces, and it would therefore be necessary to supply additional pressure of

$$62 \times 4.2593 = 264.07 \text{ lbs. per roller.}$$

$$= 132 \text{ lbs per bearing.}$$

If the rollers would have been arranged horizontally the weight of the rollers would not be available to supply the necessary pressure, and it would therefore be necessary to supply

$$120 \times 4.2593 = 511.11 \text{ lbs. per roller.}$$

$$= 256 \text{ lbs. per bearing.}$$

I have made numerous trials with 9in.x 15in. rolls, arranged one above the other, and set to 1-16in minimal distance, and I have found that, with a pressure of 150lbs. per bearing, up to 15 cwt. of wheat per hour could be properly cracked between smooth rollers. In these trials the top roller was carried in one forked lever, to which the weights were gradually hung until the required pressure was obtained. There was of course a set screw under the lever, so as to avoid the rolls coming too close.

Similar experiments were made with fluted rollers, and it was found that a pressure of 150lbs., in addition to the weight of the top roller, was sufficient for the *first two breaks* on any wheat; 200lbs. were required for the *third and fourth breaks*, and 250lbs. were amply sufficient for the *fifth break*.

*Coarse middlings* treated on smooth rolls set at 1-48in. minimal distance required 320lbs. but if a slight differential speed was employed (five teeth difference,) only 250lbs. per bearing was required in addition to the weight of the top roller. *Finer middlings*, set at 1-96in. minimal distance, required 350lbs. with

carried in levers, when the mere elasticity of the levers will cause the rolls to close up or open, according to variations in the feed. It is therefore clear that in such rolls a perfectly regular feed is of the greatest importance, because a small feed will be *much more compressed* than a full feed.

It must be borne in mind that the distance of the rolls is generally *less* than this looseness in the bearings, and that even the best fitted bearings *cannot fit quite tight*, and thus avoid the movement of the shaft in the bearing.

This closing up of the rolls with varying feed, however, becomes far more injurious for the vertical arrangement of rolls, as shown in fig. 4. When the feed is on, the top shaft will rest against the upper bearing surface of the top bearing, and as soon as the feed becomes uneven or decreases for an instant, the top roller will drop down on the bottom roller, and touch either on one side or over the whole length of the roller.

Even the very best feed apparatus cannot obviate a *momentary irregularity*, and as a matter of fact rollers *grind* each other far more than is generally thought possible. It is chiefly this grinding of roller surface against roller surface which *evolves most heat* in roller milling, and it may be said that if rollers would be so constructed that they *cannot touch each other*, whether there is feed passing or not, they will grind much *cooler* and with less *compression* than at present.

The vertical arrangement of one roll above the other possesses undoubtedly some great advantages. The most important of them is that the weight of the top roller becomes

the value of trade secrets may be elsewhere, says the *American Machinist*, in this country they appear to be substantially worthless. Especially in machine construction, a hint at their possession is looked at with a certain distrust, and those shops that have the best reputation are notably the ones that make no pretensions to mysterious operations. Secret processes are at a still further discount in this country, for the reason that those who buy machinery want to know, not only that it is good, but they also want to know why it is good, and whether it can be kept so. A machine is likely, or certain, in time to need repairs, and no one wants machinery the parts of which can be satisfactorily reproduced only by special means about which there is some mystery. The secret of the cheap production of good machinery is an open one, but those who do not possess the skill and ability can no more appropriate it however much they are allowed to examine processes, than they can write like the accomplished penman by stealing his pen and inkstand. In every workshop in the country there may be certain special knowledge of value to the general industry, and it is to the fact that ordinarily there is no attempt to conceal it, and frequently something more than a willingness to impart it, that much of the material industrial progress is due. The compensation comes in mutual giving and receiving, and in the fact that what the giver contributes does not make him the poorer. The skill and ability to plan and execute as occasion and circumstances require—those qualities of managers and workmen that cannot be given away or appropriated—constitute the secret of success, but are in no sense trade secrets.—*Manufacturers' Gazette*.

## GARDEN CITY Reduction Mills and System

GATHMANN'S PATENT.

### Perfection on First Break.

Superior to most, equal to any on Subsequent Reductions.

Every grain of wheat split through the crease, and so thoroughly done that the split kernels can be **brushed or scoured**.

The Best and Cheapest Reduction Machine and System yet offered.

Substantial, Durable, Noiseless and Light Running, Slow Motion, Large Capacity.

### RESULTS GUARANTEED.

#### TO ROLLER MILLS:

We guarantee to improve your Milling by using our First-Break Machine and System. We Split the wheat, and brush the split kernels, thereby making a greater percentage of high-grade flour than can be made under ANY OTHER SYSTEM.

#### TO MILLERS:

We have fitted up in our factory a room in which we have several of our Reduction Mills running. We cordially invite you to pay us a visit, bring sample of your wheat, give our Machine a thorough test, and judge for yourselves.

## GARDEN CITY WHEAT BRUSH!

Gathmann's Patent "inclined bristles"

—THE—

### ONLY DOUBLE BRUSH

Which can be set up close so that it will

### Thoroughly Brush Wheat.

#### Guaranteed to IMPROVE COLOR of the FLOUR.

It don't break or scratch the grain. Removes all the dust. Very light running. Send for circular and prices.

## Prices Reduced! Improved Garden City

## Middlings Purifier!

### With Travelling Cloth Cleaners

Our improved Purifier has every device requisite to make it perfect, and every one in use is giving the greatest satisfaction to the users. The Cloth Cleaners are guaranteed to clean the cloth better than is done on any other purifier.

Over 4000 Garden City Purifiers in use, nearly 800 of which are the Improved Machine.

The Best and now the Cheapest. Write for circulars and price list.

We are agents for the

## BODMER

## BOLTING CLOTH

Which has long been acknowledged as the best made, and which has lately been further improved, making it now *beyond competition*. We make it up in the best style at short notice. Send for prices and samples.

Garden City Mill Furnishing Company,  
CHICAGO, ILL.

Mention this paper when you write us.

#### ST. LOUIS MILLING STATISTICS.

In this paper, of date January 5, 1882, was published the fact that three St. Louis mills had been destroyed by fire in 1880—the "Yaeger," the "O'Fallon" and "Pacific"—and two in 1881—the "Atlantic" and the "Southern"—entailing a loss in production for the two years of over 500,000 barrels of flour. In the same edition, we gave a list of the mills in existence January 1, 1881, with the daily capacity of each. There have been numerous changes during 1882 in the flouring industry. The "Pearl," Geo. P. Plant & Co., has been abandoned and will not be run any more. The "Gamble Spring," owned by F. Buschman, has been torn down and the Anchor Milling Company has erected a new mill on its site, with a capacity of 1500 barrels per day. The extensive cracker factory of the Kendall-Bayle Cracker Company has been erected on the ruins of the O'Fallon. The Mississippi Valley, Flanagan & Richardson, is now run by Flanagan Bros., Richardson having retired. The Phoenix Empire Milling Company, has been operated during the year by the Atlantic Milling Company. The Park, formerly Stanard & Kauffman, is now run by Mr. Kauffman. The Victoria, a new mill with a daily capacity of 500 barrels, has been built by the Victoria Milling Company. The Atlantic Milling Company has erected a mill on the site of its old structure—burned Aug. 12, 1881—with a capacity daily of 1,400 barrels, and will start it to work in the course of the next month (February). Kehlor Bros., it might be mentioned here, propose to build a new mill at East St. Louis, the present year, which they intend shall be the largest in the country. Its daily capacity will be among the thousands, and it will be equipped with all the latest and most improved machinery.

#### FLOUR MANUFACTURED IN 1882.

Names of Mills	Cap. in 24 hours.	Product
Atlantic Milling Co., Phoenix	24 hours.	142,300
E. O. Stanard & Co., Eagle	700	158,263
Kehlor Bros., Lacklende	750	133,000
Kehlor Bros., Venice	400	.....
Union Steam Mill Co., Union Steam	450	134,786
Camp Spring Mill Co., Camp Spring	500	118,900
John W. Kauffman, Park	800	150,525
Empire Mill Co., Empire	600	89,433
Victoria Mill Co., Victoria	500	129,155
Sessinghaus Milling Co., Jefferson	400	91,100
Geo. P. Plant & Co., Franklin	450	84,980
Geo. P. Plant & Co., Pearl	325	63,890
Saxony Mill Co., Saxony	350	73,800
Hezel Milling Co., E. St. Louis	400	84,000
Anchor Milling Co., Anchor	800	196,350
E. Goddard & Sons Co., U. S. Mill	600	70,235
F. L. Johnston & Co., Cherry Street	350	50,900
F. Tiedemann & Co., Iron Mountain	500	31,420
H. Kalbfleisch & Co., St. George	200	31,250
W. S. Taylor & Co., Globe	150	5,000
Lallamendi Bros., Carondelet	150	17,800
J. L. Price & Co., Tuscan	125	3,000
Kehlor Milling Co., Kehlor		8,205
Total 1882		1,849,298
Total 1881		1,718,429

The Atlantic Mill was burned Aug. 12, 1881; rebuilt and completed Dec., 1882.

The Iron Mountain Mill was destroyed by fire August 24, 1882.

The Kehlor Mill was completed during Dec. 1882.

The Venice Mills were also burned during the year.

#### MILLS OWNED BY ST. LOUIS FIRMS LOCATED OUTSIDE THE CITY.

E. O. Stanard & Co., Alton City Mills, Alton, Ill., product in 1882, 122,277 bbls.

F. Tiedemann & Co., Cape County Mill, Jackson, Mo., product in 1882, 36,412 bbls.

Fath, Ewald & Co., St. Mary's mill, St. Marys, Mo., product 37,600 bbls. in 1882.

John W. Kauffman, President Mill, Belthalt, Ill., product in 1882, 30,605 bbls. Burned in August 1882.

D. L. Wing & Co., Planet Mills, Litchfield, Ill., product in 1882, 195,210 bbls.

Kehlor Bros., Edwardsville Mills, Edwardsville, Ill., product in 1882, 121,681 bbls.

There are also seven mills which turn out corn meal, rye, flour, hominy, grits and corn flour.—*St. Louis Miller*.

#### WHAT OUR ANCESTORS ATE.

Persons of extreme views are apt to maintain that all mankind, being normally savages, were as normally cannibals; but leaving that moot question altogether on one side, it seems probable that humanity ate acorns long before they ate cereals or learned the art of making bread, and that the veneration entertained by the Druids of Gaul and Britain for the oak was due to the circumstance that its glands were the staple food of the people. Bread, properly so called, was transmitted by the Greeks to the Romans; and either the latter or the Phoenicians may have introduced the cultivation of corn into Gaul. While, however, the land was mainly covered with immense forests, a long time must have elapsed before the practice of eating acorns, chestnuts and beech mast, was abandoned, and even when corn was regularly grown, ripened and harvested, the grains were merely plucked from the ear and eaten raw or slightly parched.

The next step was to infuse the grain in hot water for the making of a species of gruel or porridge, and a long time afterward it may have occurred to some bright genius to pound the corn in a mortar or rub it to a powder between two stones. Subsequently came the hand-mill; but it was not till after the First Crusade that the wind-mill was introduced from the East, whether it had probably found its way from China. The first bread was evidently baked on the ashes and unleavened, and the intolerable pangs of indigestion brought on by a continual course of "galette" or "damper" may have suggested the use of a fermenting agent, which in the first instance was probably stale bread turned sour. Pliny has distinctly told us in his "Natural History" that the Gauls leavened their bread with yeast made from the lye of beer; yet strangely enough, they abandoned the use of beer yeast, and did not resume it until the middle of the seventeenth century.

Its revival in France made the fortune of many bakers; then the medical faculty sounded an alarm, declaring that yeast made from beer was poisonous. Its employment was prohibited by law in 1666, but the outcry raised by the bakers and the public was so vehement that in the following year the decree of prohibition was cancelled, with the proviso that the yeast was to be procured only from beer freshly brewed in Paris or its immediate neighborhood. Some form of fermented bread, however, the French had been eating for 1,600 years, in contradistinction to the gruel and pulse-eating Italians and Levantines and the purely vegetarian Hindoos.

#### THE MENASHA, WIS., DAM.

The *Oshkosh Northwestern* says: As is generally known the work of the lowering of the dam and increasing the outlet of Lake Winnebago has stopped, pending the injunction sued out by Alex. Syme and now awaiting trial in the United States Court. Ever since the question of high water and the height of the Menasha dam has been under consideration the main question has been as to the ownership of the dam. The Lawson estate first got out an injunction restraining the Government from touching the dam and claiming full ownership of the dam. This was withdrawn and it is understood that the estate is now very anxious that somebody else shall be held responsible for the ownership of the dam.

Col. Harshaw, of Oshkosh, has just returned from Washington, and while there with Senator Sawyer, called on the Secretary of War, and held a consultation with him regarding the situation. To simplify all allusion to the position of the War Department on this subject, it is only necessary to say that Secretary Lincoln informed his callers that the Department would proceed no further until it was definitely concluded as to who owned the Menasha dam. If the Government owned it, he should instruct the engineers to carry out the provision of Congress regarding the alterations to its fullest scope, but if it was determined that the dam belonged to private parties, the Department would refuse to expend another dollar upon it. This main question of ownership Secretary Lincoln has referred to the Department of Justice, and the Department of Justice has referred the question to O. B. Thomas, of Prairie du Chien, for his opinion and report which will be reviewed by the Attorney-General when received. This, then, whenever it happens, will decide the action and orders of the War Department as to proceeding further with the work. Now comes in one more question, more a private one than one affecting the Government's position in the premises, and that is what acquired rights Alex. Syme has to maintain an obstruction in the stream in the shape of a mill, which rights the Government is in any way bound to respect. Symes claims in his bill praying for an injunction that he had rights and privileges prior to the Government's possession of the present Fox and Wisconsin Improvement, property, franchises, etc., and that the Government purchased, subject to all the rights, privileges and franchises then held by private parties. This suit, then, will decide whether Syme has property rights which the Government must pay for if it destroys his mill. Secretary Lincoln said he was willing and would be authorized to pay to Syme any damage he might sustain by reason of the destruction of his mill and water power, provided the courts hold in his favor on this issue. Therefore the status now is, that the Government will only proceed with the work of the Menasha dam in case the Department of Justice renders an opinion that the Government owns the dam, in which case the mills will be swept

away and the channel cleared from end to end in accordance with the provision of Congress on this subject. But whether Mr. Syme will be allowed damages for his mill depends upon the suit now pending. When the Department of Justice will render its opinion on the ownership question is not known, but steps will be taken to bring about an argument of the Syme case on demurrer within the next sixty days, so as to decide that branch of the question.

WHY BOYS DISLIKE TO LEARN TRADES.—The *Blacksmith and Wheelright* believes that the old system is, in the main, responsible for the aversion that such a large number of boys manifest for learning trades. For the first year a boy in a blacksmith shop, for instance, is put to the roughest and most disagreeable work. He is made to do a thousand-and-one things that will be of no use to him when he grows up, and have nothing to do with making him a skillful mechanic. He knows this and naturally rebels and wants to do something that will be of benefit to him. He is brought to feel that to be a good blacksmith, a man requires much brawn and little brains. That he obtains an erroneous idea of the trade he is trying to learn we all know, but, nevertheless, this impression is apt to become fixed in his mind from the character of the work he is put to do. Is it any wonder that he looks with envy on the boy behind a counter or in a lawyer's office, and longs to get away from an employment which has become irksome?

A SHIP LOAD.—The story of the water which got into the hold of a ship loaded with rice, and so swelled the cargo that it burst the vessel asunder, reminds the editor of the "Kinderhook Rough Notes," of the captain of a North River sloop, who, having hired a new cook at Albany, set him to cooking rice, which he said he had done a hundred times. Telling him that he would find five pounds in the locker, and cautioning him against cooking too much, the captain went about his business of loading his vessel with pig iron. In half an hour the new cook rushed out, exclaiming:

"For heaven's sake, captain, don't take on any more pig iron; we will have a load of baled rice before night."

The captain rushed into the cabin where he found all the pots, kettles, pails, pans, dishes, and even two washtubs full to overflowing with cooked rice, which was also seething over the top of the kettle and falling off upon the stove and the floor. "What'n thunder you been doin'?" yelled the skipper, as he glanced around. "How much rice did you put in that pot?"

"Put the whole of it, Cap.," said the lad, "and I've been doin' nothin' but bailing out rice for the last twenty minutes. Great Moses! where does all the stuff come from?"

THE KRUPP WORKS, at Essen, Germany, have this year added a wrinkle that is not new, but has probably never before been tried on so large a basis. For some time past the common workmen have been given the choice between going home at noon and lunching in the great dining hall of the works. The dinner furnished in the latter case costs the workman about 6½ cents in American money. This department has now been extended to include all the foremen, master workmen, superintendents, officials, etc., who are furnished with a good, substantial meal, such as would cost about 40 cents at an ordinary restaurant here, for about 10 cents in American currency. The object gained for thus providing for the welfare of employees is two-fold. It prevents the loss of the few minutes so commonly dropped, here and there, in getting back to duty after the whistle has stopped, and which, when multiplied by thousands of workmen, run quickly up into hours and days and weeks; and, again, this system insures substantial food to the men, and a consequent keeping up of full animal strength. The meals of a mechanician, whether master of journeyman, have much to do with his steadiness of purpose and work, and the brain and body condemned to live under the pressure of inferior and poorly cooked victuals will deteriorate at a rapid rate. Skilled labor must be fed well, and the Essen owners are doing no favor nor charity in providing in this manner for the workers in their great shops.

BURNED—The North Star Flouring Mill, Minneapolis, owned by J. G. Crosswell, located on the east side of the river burned January 9. It was one of the oldest buildings in the city and recently remodeled. Loss on building, stock, and machinery, \$20,000; insurance 23,000. The fire was but ten feet from the mammoth Pillsbury Mill, but the splendid fire protection of that mill and prompt action averted danger.

# The Geo. T. Smith Middlings Purifier.

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Quantity and Quality of Work Considered.

## Licensed Under all Patents

Owned by the Consolidated Middlings Purifier Company.

## Simple, Easily Adjusted,

### SPECIAL NOTICE.

For the more complete protection of our customers, and to put an end at once and forever to the demands for royalties by which they have recently been annoyed, we have purchased **ALL PATENTS** relating to Purifiers, lately owned by Huntley, Holcomb & Heine, including the well-known **MIDDLETON PATENT** and its several re-issues.

Every purchaser or owner of a Geo. T. Smith Purifier, in the past or future, owns the right to use it unmolested and unchallenged, and in this right we *have, can and shall* protect them.

Intending purchasers should give this notice attention, as it is of the utmost importance to them.

## Adapted to all Systems

Of Milling, and every Grade and Condition of Middlings.

## FOURTEEN SIZES

Single, Double and Special Machines.

## Durable, Light Running.

## Two Thousand SMITH PURIFIERS were Sold in 1881.

THE SMITH PURIFIER is in Use in every Milling Country in the World. More than Four Thousand are now running in the United States.

The Smith Purifier has a Positive and Effective Means of Cleaning the Silk of the Sieve. The Smith Purifier has Graded, Controllable Air Currents. It is Impossible to do Good and Economical Work without these Features.

### OUR CLOTH TIGHTENER

Makes it both convenient and easy to keep the Silk always properly stretched.

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IS POSITIVELY SELF-ADJUSTING AND RELIABLE.

WRITE FOR DESCRIPTIVE PRICE LIST AND CIRCULAR TO

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[Please Mention this paper when you write to us.]

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We are the Sole and Exclusive Licensees for this Country under the

## MORRITZ MARTIN PATENTS

ON

## Centrifugal Flour Dressing Reels

And we are now prepared to fill orders for machines with latest improvements, which include

Our New Double Conveyors! New Cloth Fixing and Stretching Device!

New and Simplified Manner of Driving!

THE CENTRIFUGAL has more than FOUR TIMES the capacity of the ordinary reel, and will make clear flour and a clean finish on stock that cannot be treated in the common reel without loss, no matter how much silk it is passed over. IT IS SPECIALLY ADAPTED to handling soft, reground material, full of light impurities, whether from rolls or stone. IT IS INDISPENSABLE to a CLOSE FINISH in any system of gradual reduction milling, and will improve the quality of the low grade flour at the same time it makes the offal cleaner. IT MAKES A CLEAN SEPARATION on caked and flaky meal from smooth rolls, which no other style of reel can do. IT IS VASTLY SUPERIOR to the common reel for dusting middlings. THEY CAN BE USED TO ADVANTAGE as a complete system of bolting, to the exclusion of the ordinary reel.

**Over one Hundred sold in six weeks.**

REFERENCE TO LEADING MILLERS IN THE UNITED STATES.

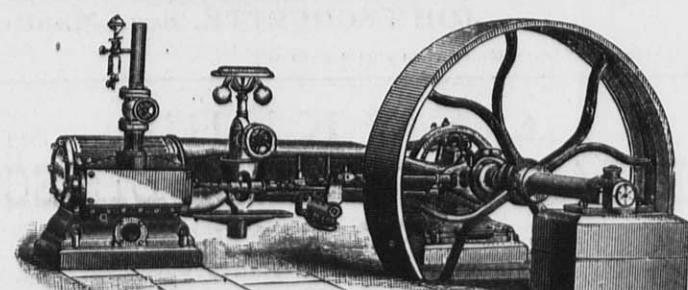
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**GEO. T. SMITH MIDDLING PURIFIER CO., - Jackson Michigan.**

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Manufacturers of

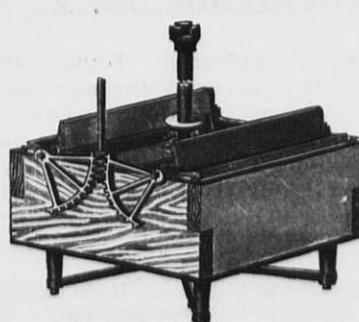
Automatic Cut-Off, Fixed Cut-Off, and Slide Valve

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## Flour Merchants,

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Consignments Accepted.

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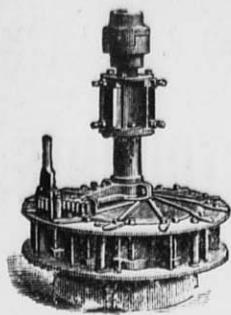
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From 1 to 20 feet diameter, of any desired face or pitch molded by our own SPECIAL MACHINERY. Shafting, Pulleys, and Hangers, of the latest and most improved designs.

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Best Quality French BURR MILLSTONES.**

Sole Agents in Dayton for the sale of

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Flour and Paper Mill Machinery, Best Chilled or Porcelain Rolls for Crushing Wheat and Middlings and

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The AMERICAN TURBINE, as recently improved, is unequaled in the power utilized from a given quantity of water, and is decidedly the **BEST "PART GATE" Water Wheel** ever known. It has also been otherwise greatly improved.

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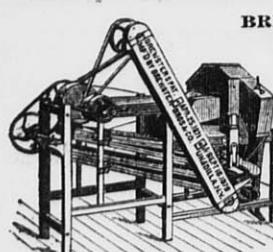
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The only reliable, practical and durable Machine  
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Built under their original patents until their expiration. Improvements since added: "STOP MOTION ON REGULATOR," prevents engine from running away; "SELF-PACKING VALVE STEMS" (two patents), dispenses with four stuffing boxes; "RECESSED VALVE SEATS" prevent the wearing of shoulders on seats, and remedying a troublesome defect in other Corliss Engines, "BABBITT & HARRIS' PISTON PACKING" (two patents). "DRIP COLLECTING DEVICES" (one patent). Also in "General Construction" and "Superior Workmanship."

The BEST and MOST WORKMANLIKE form of the Corliss Engine now in the market, substantially built, of the best materials, and in both Condensing and Non-Condensing forms. The Condensing Engine will save from 25 to 35 per cent. of fuel, or add a like amount to the power and consume no more fuel. Small parts are made in quantities and inter-changeable, and kept in stock, for the convenience of repairs and to be placed on new work ordered at short notice.

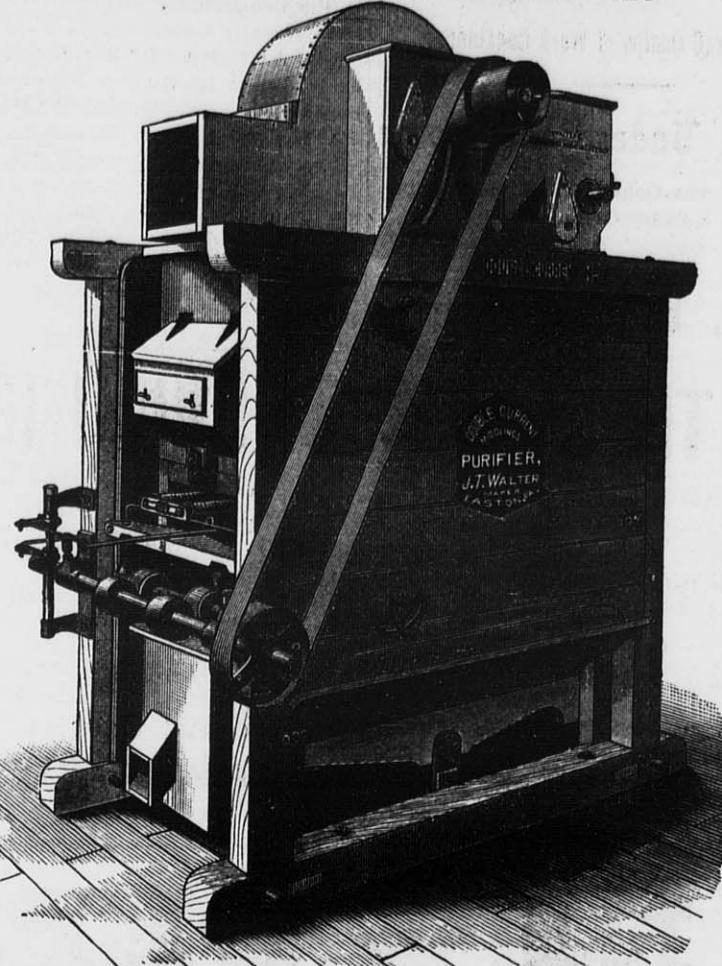
NO OTHER engine builder has authority to state that he can furnish this engine. The ONLY WORKS where this engine can be obtained are at PROVIDENCE, R. I., no outside parties being licensed.

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DOUBLE CURRENT  
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GUARANTEED TO BE THE BEST IN THE WORLD.

**WITH COLLINS' AUTOMATIC CLOTH CLEANER.**

This Purifier has the following features, which are secured to it by patent, and which no other Purifier can use:

The Automatic Separating Feeder—The Process of Taking out the Heavy Specks between each number of Cloth—The Settling of the Heavy Dust and Lifting the Light Fuzz into the Dust Room.

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Manufacturers of

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Smut Machines,

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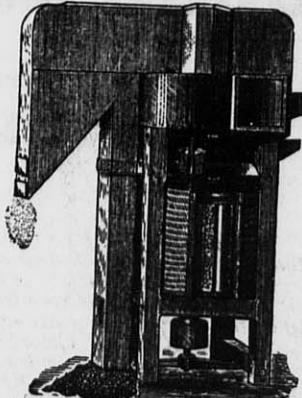
Grain Separators,

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Nearly Two Hundred of these Machines are now in operation in the city of Minneapolis, Minn., alone, and more than sixty in the city of Milwaukee, Wis. They are also extensively used in many other sections, both on Winter and Spring Wheat.

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is now issuing Policies of Insurance on all approved applications received so far. The Company has now sufficient members to allow it to increase the risks on any one Mill from \$1,000 to \$3,000.

All matters relating to Insurance should be addressed to

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AMERICAN FLOUR MILL DIRECTORY  
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It gives the Capacity and Motive Power of Mills wherever obtained.

**MILL FURNISHERS, FLOUR BROKERS,  
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WILL FIND THIS WORK SIMPLY INVALUABLE.**

PRICE, TEN DOLLARS PER COPY.

Address **THE UNITED STATES MILLER, Milwaukee, Wis.**  
Will be sent to any part of the world by Mail, POST-PAID, on Receipt of Price.

LICENSED UNDER ALL CONFLICTING PATENTS.

(For the UNITED STATES MILLER.)

## A SENSIBLE ENGLISHMAN'S VIEWS ON THE AMERICAN PROTECTIVE TARIFF.

Editor United States Miller.

Milwaukee, Jan. 26th 1882.

The following extracts, are published for the first time in this country, from an address which was prepared for delivery before the Liverpool, England, Chamber of Commerce, late in 1881 by Mr. Samuel Smith, a gentleman, who has a large acquaintance in this country, and has mingled with Americans for many years. He says, in the preface to the pamphlet, from which we copy—"It is written without bias of any kind, and simply with the view of putting forward the truth as it presents itself to the writer."

The candid spirit and kind language in which the author treats our tariff question, renders it particularly worthy of perusal; for that reason we commend it to the readers of the UNITED STATES MILLER.:

"To form sound opinions upon this point it is needful to put ourselves mentally in the positions of foreign nations, who levy heavy import duties for the avowed purpose of protecting native industry, and to ascertain honestly what are the real motives that induce them to follow a course which all our leading authorities have declared to be suicidal. It strikes me that there is great ignorance, and often not a little mis-representation, of the real motives that actuate such countries as the United States and Canada in following out the policy they have deliberately adopted.

"As one who has often argued the point with intelligent Americans in the United States, as well as in this country, I am bound to say that they make out a much better case than is generally supposed here. Speaking broadly, the view which Americans take is that manufacturing industry on a large scale cannot be planted in a new country, mainly inhabited by an agricultural population, without a period of protective duties. They hold, and I think justly, that they never could have established vast manufacturing industries in the face of free and open competition with an old and rich country like ours. In colonial days, and up to the war of 1813-14, the United States had few manufacturers; they drew their supplies chiefly from Europe, and were mainly an agricultural community, like Australia or New Zealand, but so great was the suffering caused by the war of 1813-14, and so strong a feeling did it create against this country, that it decided them to cultivate home manufactures even at the cost of paying higher prices. This policy has constantly grown since then, and was enormously stimulated by the civil war, which made a large revenue necessary, and no way of raising it seemed so easy as to levy it upon foreign goods, and thus indirectly throw a considerable part of the cost of the war upon Europe.

"The Americans are perfectly alive to the fact, that they pay higher prices than they need to do for many kinds of goods in order to build up a system of manufactures, but they argue that they get a full compensation in the great centers of industry that are thereby created, and in the capital and population that are attracted to their country by the profitable employment obtained in those great seats of trade.

"It seems clear to me that if the United States had never levied any duties at the custom house, but adopted *ab initio* a system of absolute and mutual free trade with this country, much of the population and capital that are now employed in Massachusetts and Pennsylvania would have been located in Lancashire, Yorkshire, and our coal and iron regions, producing the goods required by the rural population of America. The United States would have been a vastly magnified Australia or New Zealand, containing a thinly scattered population, and a few large commercial cities on the sea-board; but probably some millions of people would have remained in these islands, and made the goods which the American farmer needed, instead of emigrating and building up the manufacturing towns of New England, Pennsylvania &c. It is quite true that if we look merely at the interest of the individual and not at that of the nation, it is better that these millions of people emigrated and found a home in the new world than that they should have remained to swell the already too dense population of Great Britain; but the nations look at these questions from a different point of view to individuals, and what has been a source of national gain to America has been a cause of national loss to us, and in such a matter as this it is vain to expect absolute identity of interest between two rival nations.

"It may be argued, that now that the manufacturing system of America is complete, and suffices to supply almost her whole consumption, she has no longer any interest to bolster it up, but rather to aim at being a cheap producer and compete with England in the open markets of the world. No doubt there is force in this view, and it will gradually gain ground in America and lead to a relaxation of her tariff, especially as her rapidly diminishing debt makes it unnecessary to raise so large a revenue.

The point, however, I wish to insist upon is that the United States, like all new countries, our own colonies included, consider the acquisition of extensive manufacturing industries worth paying a price for, and there is no way in which they can obtain that object in the earlier stages of national growth except by a protective tariff. This motive is

so strong, and operates so constantly, that we need never expect to see it disappear, and I have little doubt that when Australia and New Zealand, and our other colonies reach a certain stage of progress they will protect their own manufactures, as Canada is now doing. It seems to me that some of our economists err in supposing that mankind are to be ruled by no principles except such as can be shown logically to facilitate the acquisition of wealth for the individual. Human nature is a very complex thing, and man is not a mere wealth producing machine. He is influenced, and justly influenced, by motives that appeal to other parts of his nature than his pocket. \* \* \* \* \*

"Love of country, of kindred, of religion, are all motives that rightly influence men, and make them willing to sacrifice something of mere gain, and it is the want of perception of this truth which has led many of our commercial authorities to underrate the powerful motives that sway foreign countries, and even our own colonies, in settling their commercial policy. Most of the countries with which we deal are willing to make slight individual sacrifice to keep a larger population at home, and give them widely varied industries, and thus make them as they think, self-sufficient." \* \* \* \*

"It is the necessity of being a large exporter which makes it the undoubted interest of England to practice and preach free trade, and just as other countries reach that position their policy will also change, and imitate ours. \* \* \* \*

"I would take this opportunity of saying that the maxims of political economy are but lame guides for the statesman when taken *per se*, and without due regard to the other relations that men sustain to each other. \* \* It has yet to be correlated with those others which deal with man as a member of society, as being subject, and rightly subject, to powerful influence on the side of religion, family and country—legislation that is based upon no higher conception of man than that of a producer or consumer of wealth will signal fail—our economical authorities and their imitators, who are often mere doctrinaires, lecture foreign nations because they do not legislate on pure economical grounds—they often display their ignorance in doing so—their stand-point is purely insular, and they palm off as universal axioms what are only deductions from our insular experience.

"Our earlier economists deduced their formulas principally from British experience, and many of these are only true as applied to the set of circumstances that surround ourselves; at least, they need large qualifications and exceptions when applied to other countries. To form correct conclusions all round, this science needs to be looked at, and its problems treated, from many and different stand-points, and I venture to say that, as this process goes on, we shall be less surprised that able and intelligent statesmen in America, France, and Germany demur to some of our dogmas."

There is ability, candor, and comprehensive deduction in the above meriting the careful consideration of every American reader.

The causes, which produced the panic from 1873 to 1878, are set forth so clearly, and their absolute disconnection with our tariff so plainly shown, that I will furnish them for your next number.

JOHN W. HINTON.

## TWO SOURCES OF DAMAGE TO BOILERS.

The *Locomotive* contains the following hints, which should be carefully read: Leakage at the girth seams and around the tubes of externally-fired, horizontal tubular boilers is one of the defects most often found, and one which is sure to become very serious in a short time if not attended to, for it induces corrosion in one of its most dangerous forms. There is nowhere to be found a better illustration of the truth of the old saying: "A stitch in time saves nine," than in this matter; and also no better illustration of the economy and value of proper care and management for steam boilers. Leakage at the seams of boilers may be induced by a variety of causes, of which we need mention here only two—bad workmanship and bad management. When the defect is due to bad workmanship the only help for it is, generally, to dress and re-caulk the edges of the plates. Sometimes, though not often, it will be necessary to cut out the old rivets, insert new ones, and then dress and re-caulk. This also is generally necessary, when a boiler has been overheated through shortness of water or otherwise. Sometimes too much lap is given the plate, when it becomes impossible to properly caulk the seams. The writer has in mind now a certain rotary bleacher, whereon the plates lapped *four inches* beyond the rivets. The result may be imagined. Obviously the only remedy in such a case is to reduce the lap. Leakage is often induced by feeding cold water into a boiler, and delivering it close to the hot plates over the fire. Severe local contraction is thus caused, which no material can resist, and leakage is sure to follow. The solid plates of the shell are very frequently fractured in this manner. Where the use of cold water is unavoidable the boiler should always be provided with a circulating feed pipe as a means of economy and safety.

In too many cases, however, the seams are shaken by the habit, which prevails extensively, of pulling the furnace doors wide open without closing the chimney damper. This is a very common way of checking the generation of steam, when there is a lull in the demand for it from any cause, and cannot be too strongly condemned. The effect of a large body of air some hundreds of degrees colder than the furnace and boiler, rushing along the under side of the shell, is sufficient to loosen the best joint that ever was made, and in many cases it has fractured the shell through the solid plate. The effect of this is even more marked with some types of internally-fired boilers, such as the "drop-flue," for instance, than it is with the common return tubular boiler.

Another fruitful source of damage to boilers and one which has ruined thousands, is the practice of blowing a boiler off and immediately refilling it with cold water, while the brickwork is red hot. Nothing will tear a boiler to pieces quicker than this. Boilers have exploded with disastrous effect from this cause, hours after the fire had been drawn. Probably most persons not familiar with the matter, would be surprised to know the pertinacity with which cold water will cling to the lowest point of a boiler under these circumstances. Local contraction of such severity is thus induced that nothing can withstand its effects, and a few repetitions are generally sufficient to ruin any boiler.

## ITEMS OF INTEREST.

HEADACHE.—Dr. Haley says (*Australian Medical Journal*, of August 15, 1881) that, as a rule, a dull, heavy headache, situated over the brows and accompanied by languor, chilliness, and a feeling of general discomfort, with distaste for food, which sometimes approaches to nausea, can be completely removed in about ten minutes by a two-grain dose of iodide of potassium dissolved in half a wineglassful of water, this being sipped so that the whole quantity may be consumed in about ten minutes.—*Glasgow Med. Journal*.

ABOUT OLD SOCKS.—In the grave of an Egyptian mummy there were found a pair of knitted stockings, which gave the surprising evidence that, firstly, short stockings, resembling socks, were worn by the ancient Egyptians; and, secondly, that the art of knitting stockings had already attained great perfection in ancient Egypt. These curious stockings are knitted in a very clever manner, and the material, fine wool of sheep, that might once have been white, is now brown with age. The needles with which the work was done must have been a little thicker than we should choose for the same purpose, and the knitting is loose and elastic. The stocking is begun just as we make the design, only in the simplest manner, with single thread, but in the continuation of the work it is not simply plain but fanciful. The usual border of the stocking which prevents the rolling up of the work, is narrow, consisting of a row of turned loops, and the circle, the nicely shaped heel, which is a little different to our method, show a very skillful hand. But in the point of the stocking there is a characteristic difference between the Egyptian stockings and our modern socks. While ours end in a rounded point the Egyptian stockings run out in two long tubes of equal width like the fingers of a glove. This strange shape is made to suit the sandals, which are furnished with a strap, fastened about the middle of the sandal, and as the strap has to be laid over the stocking the division is needed.

The Secretary of the Treasury has authorized the coinage of a five-cent nickel piece of a new design. The new coin weighs twenty-one millimetres, which is one millimetre more than the present coin, and is a little larger and thinner than the one now in circulation. On the face of the new coin is a female head surmounted by a fillet upon which is inscribed the word "Liberty," the whole being surmounted by thirteen stars. The reverse side contains a wreath surrounding a Roman numeral representing the denomination of the coin.

A SOUND OPINION.—If our opinion were asked as to the manufacturing and mining outlook of 1883, we should confine it to impressing upon workingmen the value of economy, the laying away of whatever each can to meet a contingency. If business shall move along quietly and prosperously the savings will do no hurt, while if there shall be trouble the dollars in the old sock or the savings bank will be of infinite use, and serve as a solid basis of consolation to counteract the misery of idle days.—*National Labor Tribune*.

## NEWS.

N. W. PAGE & SON, owners of the steam grist mill at Ar-  
lington, Ga., have failed.

A. P. HOGLE, miller at Richmond, Ind., has made an assignment.

J. G. HIGGINS succeeds Sprague & Higgins in the milling business at Guilford, Ks.

CROW, THRELKELD & CO. succeed J. H. FOX & CO., in the mill at Shelbina, Mo.

BENJ. CLEAVER has purchased James L. Cowan's mill at Lebanon, Oreg.

It is said that Brandon, Manitoba, offers first class inducements to secure the erection of a flour-mill there.

BENNETT & GATES of Geneva, Ill., have placed an order with The John T. Noye Mfg. Co., of Buffalo, N.Y., for another Stevens smooth roller mill.

THE JOHN T. NOYE MFG. CO., of Buffalo, are filling an order for Mr. C. W. Turner, of Christ Church, New Zealand, which includes one five-break concentrated roller mill; three pairs of Stevens detached mills; two G. T. Smith purifiers; one Barnard & Leas separator; Richardson wheat scourer; Empire bran duster; Howes, Babcock & Ewell flour packer; a Bowsher motion indicator.

FOOTE & WEAVER of Honeoye Falls, N.Y., have bought a 20-inch middlings mill of The John T. Noye Mfg. Co. of Buffalo.

ELLES & KRAUSS of Evansville, Ind., have ordered another Stevens double roller mill, of the John T. Noye Mfg. Co. of Buffalo, N.Y.

SYLVESTER NELSON of St. Catherines, Ont., has ordered of the John T. Noye Mfg. Co., four Niagara bran dusters.

WALTER J. BLOOD of Yates P. O., N.Y., will put a 36-inch under runner mill, furnished by The John T. Noye Mfg. Co., of Buffalo, N.Y.

A two-break concentrated mill has been supplied by The John T. Noye Mfg. Co. of Buffalo, for W. S. Meyer & Bro., of Westminster, Md.

JOS. POLLARD & CO., of Vincennes, Ind., have ordered another Stevens double roller mill from The John T. Noye Mfg. Co. of Buffalo, N.Y.

SMITH, HILL & CO. of Quincy, Ill., have recently placed an order with The John T. Noye Mfg. Co. of Buffalo, N.Y., for two double and one single, Stevens roller mills.

HIGBEE & CO. of Bellevue, Ohio, are putting in another Stevens roller mill, supplied by The John T. Noye Mfg. Co. of Buffalo, N.Y.

JOS. WAGNER & CO. of San Francisco, Cal., placed an order with The John T. Noye Mfg. Co. of Buffalo, during the past month, for eighty-four pairs of Stevens roller mills. We understand that they are all to go into one mill on the Pacific coast.

SOLO & SON of Traer, Iowa, have ordered a Stevens double roller mill of The John T. Noye Mfg. Co. of Buffalo, N.Y.

J. D. GREEN & CO. of Faribault, Minn., is putting in a Stevens double, smooth roller mill.

MAY, WEBER & CO. of Watertown, Wis., have ordered one of Stevens single roller mills.

GEO. H. JOHNSTON of Detroit, Minn., has placed his order with The John T. Noye Manufacturing Co. of Buffalo, N.Y., for a four-break concentrated mill and other machinery.

A Stevens double roller mill has been ordered by the Great Western Mfg. Co. of Leavenworth, Kan., from The John T. Noye Mfg. Co. of Buffalo, N.Y.

HENRY HUCH, at Columbia, Ill., is making some very material changes in and additions to his mill at that place and has ordered, among other necessary machinery, four sets of double Stevens roller mills. The John T. Noye Manufacturing Company of Buffalo, have the order.

THE mill of Messrs. Rodee & Bill at Ogdensburg, N.Y., will be a full-fledged roller mill, and will have twelve sets of Stevens double roller mills, supplied by The John T. Noye Mfg. Co. of Buffalo, N.Y.

MESSRS. DOW, GILMAN & HANCOCK of Davenport, Iowa, recently purchased four pairs of Allis Rolls in Gray's noiseless frames from Messrs. Edw. P. Allis & Co. of Milwaukee, Wis.

MR. H. HUTCH of Columbia, Ill., has been remodeling his mill, and has put in eight pairs of Allis Rolls in Gray's noiseless frames, from the Reliance Works of Messrs. E. P. Allis & Co., Milwaukee, Wis.

MESSRS. EDW. P. ALLIS & CO. of Milwaukee, lately sold the Muskegon City Mill Co. of Muskegon, Mich., two pairs Allis Rolls in Gray's noiseless frames, for their mill at that place.

MESSRS. WILLY & CO. of Appleton, Wis., have put in two pairs of Allis Rolls in Gray's noiseless belt frames, from Messrs. E. P. Allis & Co.

MR. G. EISENMAYER of Summerfield, Ill., has lately purchased four pairs of Allis Rolls in Gray's noiseless frames, from Messrs. E. P. Allis & Co. of the Reliance Works, Milwaukee, Wis.

MESSRS. E. P. ALLIS & CO. recently sold Messrs. Manro & Neyhart of Auburn, N.Y., two pairs of their Allis Rolls in Gray's noiseless frames.

MESSRS. EDW. P. ALLIS & CO. of Milwaukee, Wis., have recently received an order from the Great Western Mfg. Co. of Leavenworth, Kas., for eighteen pairs of Allis Rolls in Gray's noiseless frames, for mills that they are furnishing. The Great Western Mfg. Co. is doing quite a large business in this line now, and is using only the celebrated Allis Rolls.

MESSRS. CHISHOLM, BROS & GUNN of Minneapolis, Minn., placed an order with Messrs. E. P. Allis & Co. lately, for eight pairs Allis Rolls in Gray's noiseless frames.

MR. D. HAMIL of Newton, Kas., has put in two pairs of Allis Rolls in Gray's noiseless belt frames recently, from E. P. Allis & Co., Milwaukee.

MESSRS. EDW. P. ALLIS & CO. of Milwaukee, Wis., have lately sold Messrs. Morrow & Bro., of Athensville, Ill., two pairs of Allis Rolls in Gray's noiseless belt frames.

THE Garden City Mill Furnishing Co. of Chicago, Ill., recently purchased two pairs of Allis Rolls in Gray's noiseless frames from Messrs. E. P. Allis & Co. of Milwaukee, Wis.

MESSRS. EDW. P. ALLIS & CO. of the Reliance Works, Milwaukee, lately received an order for two pairs of Allis Rolls in Gray's noiseless frames, from Messrs. Matthews Bros., for their mill at Anamosa, Iowa.

THE Hudsonton of Terre Haute, Ind., have purchased two pairs more of Allis Rolls for their Hominy mills at Terre Haute, in Gray's frames.

MESSRS. HUTTON, HARRIS & CO. of Auburn, Ill., have put in an Allis Roller outfit in Gray's noiseless belt frames, from Messrs. Edw. P. Allis & Co. of Milwaukee, Wis.

THE Saxony Mills of St. Louis, Mo., have placed their order with Messrs. Edw. P. Allis & Co. of Milwaukee, Wis., for twenty-four pairs of Allis Rolls, all in Gray's noiseless belt frames.

MR. L. V. RATHBUN of Rochester, N. Y., has lately purchased two pairs of Allis Rolls in Gray's noiseless frames, from Messrs. Edw. P. Allis & Co. of Milwaukee, Wis.

MESSRS. GUNN SCOTT & CO. of Minneapolis, Minn., have lately ordered of Messrs. Edw. P. Allis & Co. of the Reliance Works, Milwaukee, Wis., four pairs of Allis Rolls in Gray's noiseless belt frames, for their mill there.

MESSRS. E. P. ALLIS & CO. of Milwaukee, lately sold Messrs. W. D. Washburn & Co. of Minneapolis, Minn., two pairs more of their Allis Rolls in Gray's noiseless belt frames.

MESSRS. BECKER & UNDERWOOD of Dixon, Ill., have ordered two pairs more of Allis Rolls in Gray's noiseless belt frames, from Messrs. Edw. P. Allis & Co. of Milwaukee, Wis.

THE Richmond City Mill Works of Richmond, Ind., have placed their order with Messrs. E. P. Allis & Co., of Milwaukee, Wis., for two pairs of Allis Rolls in Gray's noiseless belt frames.

MESSRS. WILFORD & NORTHWAY, the extensive mill furnishers of Minneapolis, Minn., lately ordered of Messrs. E. P. Allis & Co. of Milwaukee, Wis., four pairs of Allis Rolls in Gray's noiseless frames, for mills that they are furnishing.

MESSRS. E. SANDRSON & CO. of Milwaukee, Wis., recently ordered six pair more of the celebrated Allis Rolls, in Gray's noiseless frames, from Messrs. Edw. P. Allis & Co. of the same place.

MESSRS. EDW. P. ALLIS & CO. of Milwaukee, have placed eighteen pairs of Allis Rolls in Gray's noiseless belt frames in the mill of Messrs. Valler & Spies at Marine, Ill.

MESSRS. KNOEBEL BROS. of Belleville, Ill., lately bought two pairs of Allis Rolls in Gray's noiseless frames, from Messrs. E. P. Allis & Co. of Milwaukee, Wis.

MESSRS. EDW. P. ALLIS & CO. of Milwaukee, Wis., recently filled an order from Messrs. Richards & Butler of Indianapolis, Ind., for six pairs of Allis Rolls in Gray's noiseless frames.

MR. R. RUSTIN of Evansville, Ind., has recently changed his mill over to the roller system and put in twenty-two pairs of Allis Rolls, in Gray's noiseless frames, from Messrs. E. P. Allis & Co. of the Reliance Works, Milwaukee, Wis.

MESSRS. EDW. P. ALLIS & CO. of Milwaukee, Wis., have sold Mr. Ferdinand Schuhacher of Akron, Ohio, forty pairs of Allis Rolls in Gray's noiseless frames for his mill at that place.

MESSRS. I. Q. HALTEMAN & CO. of St. Louis, Mo., recently ordered two pairs of Allis Rolls in Gray's noiseless frames, from Messrs. E. P. Allis & Co. for one of their customers.

MESSRS. SHELLABARGER & GRISWOLD of Topeka, Kas., lately put in another pair of Allis Rolls in their mill at that place, from Messrs. Edw. P. Allis & Co. of Milwaukee, Wis.

MESSRS. E. P. ALLIS & CO. of Milwaukee, Wis., lately sold Messrs. Burroughs & Pierson of Flint, Mich., two pairs of Allis Rolls in Gray's noiseless frames.

MESSRS. EDW. P. ALLIS & CO. of Milwaukee, Wis., recently sold Messrs. Fath, Ewald & Co. of St. Louis, Mo., twelve pairs of Allis Rolls in Gray's pat. noiseless belt frames.

THE Renick Mill Co. of Renick, Mo., have been improving their mill by adding an outfit of Allis Rolls in Gray's noiseless frames.

MR. J. D. WARREN, Wauwatosa, Wis., lately put in eight pairs of Allis Rolls, all in Gray's pat. noiseless frames.

MESSRS. EDW. P. ALLIS & CO. of the Reliance Works, Milwaukee, Wis., lately furnished Mr. J. P. Smith two of their new four break machines, also a full line of their celebrated Allis Rolls, for his mill at Mankato, Minn.

MR. H. C. GOLDFTHWAIT of Marion, Wis., recently purchased of Messrs. Edw. P. Allis & Co. of the Reliance Works Milwaukee, two of the new four break machines manufactured by them. These machines are giving general satisfaction wherever used, and the demand for them is constantly increasing.

MESSRS. EDW. P. ALLIS & CO. of Milwaukee, Wis., recently sold Mr. G. Ziebold at Rose Bud, Ill., eighteen pairs of Allis Rolls in Gray's pat. noiseless frames.

THE Brass Foundry and Machine Works of Ft. Wayne, Ind., recently placed their order with Messrs. E. P. Allis & Co. of the Reliance Works, Milwaukee, Wis., for nine pairs of Allis Rolls, all in Gray's noiseless belt frames, for a job that they have under construction.

THE following parties have lately bought the well-known Becker Wheat Brush, made by the Eureka Mfg. Co. of Rock Falls, Ill.:

Ragsdale & Harrison, Greenville, Texas; W. E. Damon & Co., Sharpsburg, Ky.; R. H. Heywood, Venice, O.; Barney & Kilby, Sandusky, O.; Herman & Co., Monroeville, O.; Nordyke & Marmon Co., Indianapolis, Ind.; Blish

& Crane, Seymour, Ind.; E. E. Fuller, Ottawa, Kan.; Knauth, Nachod & Kuhne; and Marvel Bros., New York.

N. P. BOWSHER'S Mill Furnishing Works at South Bend, Ind., burned recently.

BURNED—L. G. Joslin's grist mill at Hubbardston, Mass.

BURNED—John Hess & Son's flouring mill at East Springfield, O. Loss \$4,000; no insurance.

THE Atlas Engine Works of Indianapolis, Ind., report their business in a flourishing condition, and consequently on the increase. They have received in the past few weeks a large number of orders for engine and boiler outfit, ranging in size from 20 to 600 horse-power, and to be shipped to 28 different States; beside several for foreign shipment. Among other orders are two for Corliss engines having a steam cylinder 32 inches diameter and 48 inches stroke—one for the Winona Lumber Co. at Winona, Minn., and the other for D. L. Wing & Co. of Litchfield, Ill.

THE flour mills in the City of Baltimore, Md., manufactured 459,605 barrels of flour during the year 1882. The Baltimore *Journal of Commerce* in its annual review of the trade and commerce of Baltimore, says: "The superior quality of southern winter wheat, from which the best grades of Baltimore Flour is manufactured, enables our millers to fully maintain the character of their brands, and the late improvements which have been introduced by our leading millers make them now formidable as well as successful competitors with the highest grades of spring wheat offered in our market. Facts which have

recently been published, relating to the testing of the respective production of bread made from winter and spring wheat have caused to be modified the erroneous opinion previously existing as to the difference in favor of the latter, which was proven very much smaller than had always been claimed.

THE boiler in the Hoffman & Sillman's mill at Fillmore Center, Mich., exploded Jan. 4, injuring six men. One is dead, and two more are expected to die. The boiler was thrown a distance of 300 feet.

THE Machine Shops of the Great Western Manufacturing Company, Leavenworth, Ks., were destroyed by fire Jan. 21. Most of the patterns were saved, but the building and machinery were a total loss. The stove works adjoining the machine shops were damaged \$6,500 by water. Loss on machine shops, building and machinery, about \$75,000; insurance, \$25,000. The origin of the fire is unknown. Four hundred men are thrown out of employment. The works have orders away ahead, and will be rebuilt at once.

ALFRED BENNETT is building a flouring mill of two run, at Ottawa, Mich. His machinery is being made by Nordyke & Marmon Co. of Indianapolis, Ind.

HADLEY & SON of Indianapolis, Ind., are the purchasers of a two run mill outfit from the Nordyke & Marmon Co. of Indianapolis, Ind., which is to be erected in their immediate vicinity.

THE Mill of Aaron & McGuire at Coatesburgh, Ill., is to be changed to the roller or gradual reduction system. Nordyke & Marmon Co. of Indianapolis, Ind., are making the roller mills and other machinery to be used in the remodeled mill.

A large roller mill is being built at Harrisburgh, Ill., and from reading an account of it in a local paper, we judge it commands a considerable share of the attention of the denizens of that locality. The mill is being built by the Nordyke & Marmon Co. of Indianapolis, Ind.

JOS. RICHARD, a merchant of Deer Lodge, Montana, has ordered machinery for a new flouring mill of Nordyke & Marmon Co. of Indianapolis, Ind., which will be set up at the above place. This addition to the town fills a "long felt want."

A new process mill is going up in Fairmount, Ill., owned by Catlett & Benson, who have ordered their machinery of Nordyke & Marmon Co. of Indianapolis, Ind.

GAFF, GENT & THOMAS are erecting an immense establishment at Columbus, Ind., which will be devoted to the manufacture of hominy, grits and other corn goods including their renowned "Farina." Most of their new machinery is being made by Nordyke & Marmon Co. of Indianapolis, Ind.

A new mill for the manufacture of hominy and corn flour is being built at Circleville, Ohio, for Messrs. Hofner & Reichelsdorfer, who have ordered the necessary machinery made by Nordyke & Marmon Co. of Indianapolis, Ind.

A new corn mill establishment and grain elevator of 25,000 bushels capacity is being built at Beverly, Mass., for T. W. Dodge, who is getting his mills and machinery of Nordyke & Marmon Co. of Indianapolis, Ind.

D. G. STEWART a prominent grain merchant of Pittsburgh, Pa., has ordered the machinery and plans for a 40,000 bushel elevator from Nordyke & Marmon Co. of Indianapolis, Ind.

W. S. MYERS & BRO. of Westminster, Md., the owners of the fine flouring mill at that place, are getting the machinery for a 30,000 bushel elevator from Nordyke & Marmon Co. of Indianapolis, Ind.

BURNED, Jan. 23, the "Model Mill" at Neenah, Wis. The loss is estimated at from \$15,000 to \$17,000. Fully insured. Fire supposed to be incendiary.

BURNED, the flouring mill owned and operated by John J. Kelly in the town of Washington, five miles south of Eau Claire, Wis., together with its contents, consisting of large quantities of flour and grain, was burned, Jan. 24. Total loss estimated at \$8,000, on which there was an insurance of 4,500 in the following companies: Standard of London, \$1,250; Orient of Hartford, \$1,250; Star of New York, \$1,000; Western of Toronto, \$1,000.

MESSRS. LUKINS & NORTH have recently purchased two pairs more of Allis Rolls in Gray's noiseless frames, for their mill at Atchison Kas.

BURNED, Jan. 23, the flour mill owned by Haynie & Sons, at Farmer's City, Ill. Loss \$15,000; insurance \$5,500.

BURNED, the North Star Flouring Mill, Minneapolis, owned by J. G. Crosswell, located on the east side of the river, burned January 9. It was one of the oldest buildings in the city and recently remodeled. Loss on building, stock and machinery, \$20,000; insurance \$32,000. The fire was but ten feet from the mammoth Pillsbury Mill, but the splendid fire protection of that mill, and prompt action averted danger.

THE Creston Milling and Produce Co., Creston, O., have adopted the Livingston system of gradual reduction, having purchased of Stout, Mills & Temple, Dayton, O., a full line of Livingston mills and necessary machinery.

J. M. VEACH & CO. of Adairsville, Ga., have adopted the roller system, having just purchased of Stout, Mills & Temple, Dayton, O., a full line of Livingston double mills.

CARSON & RAND, Eau Galle, Wis., are putting in a full line of Livingston double mills, and all necessary machinery, from Stout, Mills & Temple, Dayton, O.

H. L. WETHERALD & SON of Connersville, Ind., have just contracted with the old, reliable mill furnishers, Stout, Mills & Temple, Dayton, O., for a complete roller mill outfit, using their 9 x 24 Gilbert combined mill for breaks, and Livingston finishing rolls.

KISER & PIERSON, Ottumwa, Iowa, have contracted with Stout, Mills & Temple, Dayton, O., for a full line of machines and machinery for a gradual reduction mill, using the Gilbert combined mill and Livingston finishing rolls.

SHARPS DISTILLING CO., Lairs Sta., Ky., have just placed their order with Stout, Mills & Temple, Dayton, O., for additional Livingston rolls, being so well pleased with those purchased some time since.

WILLEY & MOORE, Lockport, N. Y., are remodeling their mill to the gradual reduction system, having purchased from Stout, Mills & Temple, Dayton, O., through their eastern agent, Charles Rakes, Lockport, N. Y., a Gilbert combined mill, with Livingston finishing rolls, and all necessary machinery.

JNO. SCHAUTZ of Zimmermanville, O., has just ordered of Stout, Mills & Temple, Dayton, O., a Gilbert combined mill, and Livingston finishing rolls.

THE new gradual reduction mill of J. F. Watting, Novell, Mich., just finished by Stout, Mills & Temple, Dayton, O., has been running successfully, without a choke or stop, and without a change ever since they started it, now over three weeks. They are using Livingston rolls.

BURNED, Jan. 30, the "Cambridge Flour Mill" at Cambridge, O. Loss \$10,000. Insurance \$5,000.

THE trade of the Pesth (Austria-Hungary) mills during 1882, shows a considerable improvement over that in 1881; in 1882, in fact, the exports of flour from Pesth were 2,866,628 sacks of 280 lbs., against only 2,245,000 in 1881.

THE Flour mill at Cambridge, O., burned Jan. 31. Total loss \$12,000,00, insurance \$5,000.

#### FOREIGN NEWS ITEMS.

ON the morning of Dec. 29th, the largest roller flour mill in Great Britain was destroyed by fire. The mill was the property of Mr. Bernard Hughes, and was located in Belfast, Ireland. One fireman was killed and three others were badly hurt. The mill and stock was insured for \$200,000, which goes a good ways towards covering the loss.

OVER thirty roller mills were built in Great Britain during 1882, and a great many other mills put in rolls and made other extensive improvements. Contracts have also been

made for fitting up three mills on the Jonathan Mills system.

IN Southern Brazil wheat-flour sell for 7 to 10 cents per pound, corn-meal 3 to 5 cents, and bread from 8 to 12½ cents per pound.

United States Consul General Jno. H. Smyth, says, that flour of good quality in barrels and half barrels is an article in great demand at Monrovia, Liberia, Africa.

THERE is a steam-flour mill in Jaffa, Palestine. It consumes half of the coal imported into the country, or 300 tons a year.

THE value of the wheat, exported from British India, to Great Britain during the crop year 1881—'82, was \$15,862,572, against \$8,183,097 in 1880—'81.

HON. Eugene Schuyler, United States Consul General at Bucharest, Roumania, in his report to the Department of State just published says:

"By a law passed during the last year import duties have been placed on flours as follows: Wheat flour of every quality, 3.50 francs per 100 kilograms (67½ cents per 220 pounds); rye flour, 3 francs per 100 kilograms (58 cents per 220 pounds); maize, barley, millet, and buck-wheat flour, 2 francs per 100 kilograms (38½ cents per 220 pounds); and on bran of every kind, 1 franc per 100 kilograms (19½ cent per 220 pounds.)"

THE average wheat crop of Roumania is said to be about 25,000,000 bushels.

GREECE does not export grain of any description but imports generally about half, the amount of wheat and maize consumed by the inhabitants from Russia and Turkey. The crops of 1882, were especially good, and consequently imports of cereals are light.

BRITISH millers are not very well satisfied with business during the past year, having suffered greatly from the increased competition of American and Hungarian flours. There was the heaviest import of wheat and flour during 1882, yet recorded at being 147,200,000 bushels in 1882, against 130,400,000 bushels in 1881.

MESSRS J. & H. Robinson's new Gray roller mill at Deptford, London, is nearing completion.

MESSRS Meads' mill, London, on the Jonathan mills system, will be running soon.

J. W. FRENCH's mill, London, built on the Stevens roller system, started up recently, satisfactorily to all parties concerned.

THE new permanent station for the Signal Service on Pike's Peak, Col., has been completed. There are telegraphic wires connecting the station with less altitudinous points. The new building is constructed in the most substantial manner, of granite, laid in cement, and every precaution taken to secure the observers from accident or distress from the terrific storms that delight in visiting that high old place. This station is 14,000 feet above the level of the sea.

THE new elevator just erected in Detroit is one of the largest in the country. It is of brick, is 311 feet long, 93 feet wide, and 188 feet high. It has a capacity of 1,300,000 bushels. The belting is of rubber. The main belt is 48 inches wide. The elevator bucket belts are 30 inches wide. The machinery, it is said, has a capacity to handle in ten hours all the grain the elevator can store.

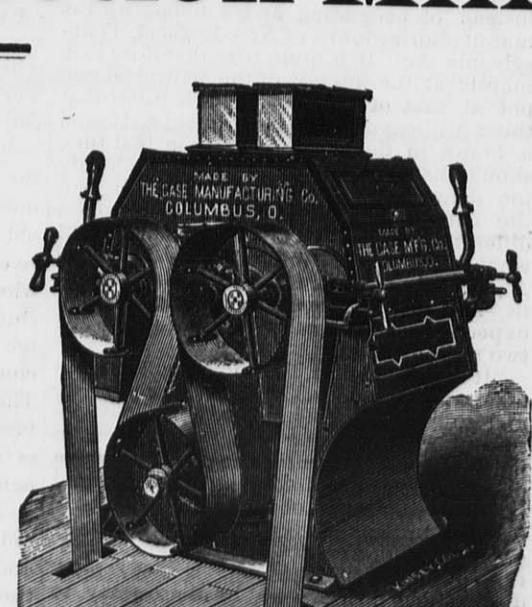
## A Complete Gradual Reduction Mill

We are making a distinct line of machines for mills of different capacities. We have one size for small mills, 25 to 75 bbls. in twenty-four hours; one for medium, 75 to 150 bbls.; and another for the largest size. Prices according to capacity. From each we guarantee results equal to any in the world. Our Patent Automatic Feed is on each Roll, large and small, we send out. The Feed is all important in Roller Milling.

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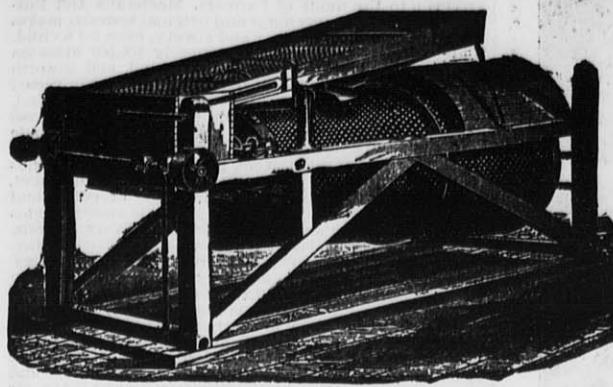
CASE MANUFACTURING CO.,  
Columbus, Ohio.

[Please mention the UNITED STATES MILLER when you write.]



Our Four Roller Belted Mill  
"BISMARCK"  
The King of the Mill, has an  
Automatic Feed.

# COCKLE SEPARATOR MANUFACTURING COMPANY, MILWAUKEE GENERAL MILL FURNISHERS



PLAIN COCKLE MACHINE.

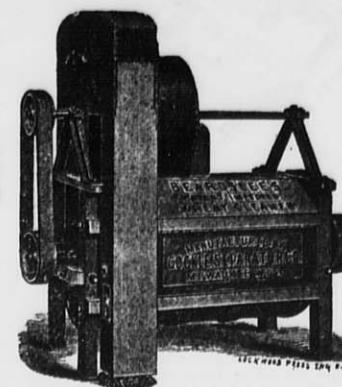
## IMPROVED COCKLE SEPARATORS

(Kurth's Patent.) Also built in combination with

### Richardson's Dustless Wheat Separators!

Also Sole Manufacturer of BEARDSLEE'S PAT. GRAIN CLEANER.

We will contract to furnish entire Wheat Cleaning Machinery for mills, and guarantee the best results.



BEARDSLEE'S WHEAT CLEANER.

Send for Illustrated Catalogue.

WE GUARANTEE GREAT CAPACITY combined with GOOD QUALITY OF WORK. Any common Sieve will separate the cockle from wheat, but to separate it WITHOUT WASTE is the GREATEST FEATURE of our Machine. A WASTEFUL machine is a DAILY LOSS OF MONEY in a mill. There is NO MACHINE IN THE MARKET which can stand comparison with ours.

Carbondale, Ill., Dec. 2, 1881.  
Cockle Separator Mfg. Co., Milwaukee.  
Gentlemen:—Replies to your late favor, would say that we can cheerfully recommend your Cockle Separator as doing all that you claim for it. We have tested ours thoroughly by this time and know whereof we speak. We would not think of doing without it, having tried it once, and can conscientiously vouch for its good work.

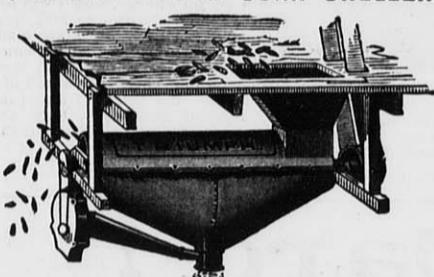
Yours respectfully,  
BROWN & WINFREY.

Perrysville, Ind., Nov. 24, 1881.  
Cockle Separator Mfg. Co., Milwaukee.  
Sirs:—The combined machine I bought of you has been running about three weeks. It certainly does all you claim for it, and is the most perfect Separator that I have any knowledge of.

Yours respectfully,  
B. O. CARPENTER.

Pott's Patent Automatic Feeder!

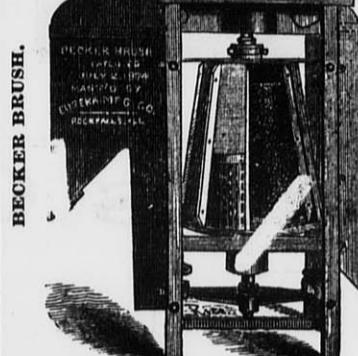
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Shells and Cleans 2,000 Bushels Ears per Day.  
The Cheapest, Best, and most Simple Power Corn Sheller in use. Send for Circular and Price List.  
Manufacturers of Steam Engines, Mill Builders and Mill Furnishers.

THE PAIGE MFG. CO., Painesville, Ohio.

[Mention this paper when you write us.]



### STEEL CASTINGS

Works, CHESTER, PA.

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### EUREKA MANUFACTURING CO.,

Manufacturers and Sole Proprietors of the

## BECKER BRUSH,

AND

Galt's Combined Smut and Brush Machine.

The Only Practical Cone-Shaped Machines in the Market, and for that Reason the Best.

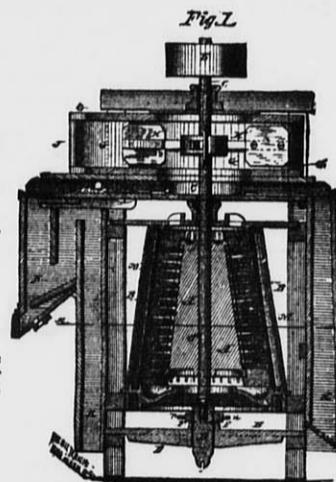
ADJUSTABLE WHILE IN MOTION.

Nearly 1,000 of these Machines in Use.

In the United States and foreign countries, and so far as we know all that use them are pleased. Millers, millwrights, and milling experts claim the Cone Shape Solid Cylinder Brush is the true principle to properly clean grain. All machines sent on trial, the users to be the judges of the work. For price and terms apply to

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### FROM 1-4 TO 10,000 LBS. WEIGHT.

True to pattern, sound and solid, of unequalled strength, toughness and durability. An invaluable substitute for forgings or cast iron requiring threefold strength. Gearing of all kinds, Shoes, Dies, Hammer-Heads, Cross-Heads, for Locomotives, etc. 15,000 Crank Shafts and 10,000 Gear Wheels of this steel now running prove its superiority over all other steel castings. CRANK SHAFTS, CROSS-HEADS and GEARING, specialties. Circulars and price list free. Address,

CHESTER STEEL CASTINGS CO.,  
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Unless you wish to know that C. F. MILLER, of Mansfield, O., is better prepared than ever before, to furnish Materials and Plans for Stone or Roller Mills of any desired capacity. A very superior quality Genuine Zurich Silk Anchor Bolting Cloth, by the piece or made up with webbing in any quantity desired. Prices always reasonable. Personal attention given to all communications relating to Plans, Specifications and general arrangement, and selection of Machinery free to my customers.

Thankful for past favors, and wishing my Milling friends a happy and prosperous year.

I am very respectfully,

C. F. MILLER.

[Mention the UNITED STATES MILLER when you write us.]

"THE BEST IS CHEAPEST."  
ENGINES, THRESHERS SAW-MILLS,  
Horse Powers CLOVER HULLERS  
(Suited to all sections.) Write for FREE Illus. Pamphlet  
and Prices to The Aultman & Taylor Co., Mansfield, Ohio.  
Millers and Grain Buyers can secure  
agency for the above goods (it  
will prove a profitable agency, free  
from risks and carelessness, for  
trade with farmers) by writing to  
THE AULTMAN & TAYLOR CO., MANSFIELD, OHIO.

Over 1,500 of these Turbines  
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It has tight shutting and easily  
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BURNHAM BROS.

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The RICHMOND MILL WORKS, and RICHMOND MILL FURNISHING WORKS are wholly removed to Indianapolis, Ind., with all the former patterns, tools, and machinery, and those of the firm who formerly built up and established the reputation of this house; therefore to save delay or miscarriage, all letters intended for this concern should be addressed with care to

NORDYKE & MARMON CO.,

INDIANAPOLIS, IND.

## GANZ & CO., Budapest, Austria-Hungary.

We are the first introducers of the Chilled Iron Rollers  
for milling purposes, and hold Letters patent for the  
United States of America. For full particulars address as  
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Mill Furnishing,  
Foundrymen & Machinists.  
Established 1851.  
MANUFACTURERS  
MILL STONES.  
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For two dollars and upwards. Also RUBBER STAMPS BURNING BRANDS, SEALS, STEEL NAME STAMPS LETTERS AND FIGURES, Etc. Orders promptly attended to  
CHAS. H. CLARKE,  
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MANUFACTURERS OF  
Circular Saw Mills, Shafting, Pulleys,  
Hangers & General Mill Machinery,  
Stating Particulars of Steam, &c.  
Address: T. C. ALCOTT & SON,  
Mount Holly, N. J.

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## Milling Made Profitable.

We build mills on any system known. We guarantee a saving of 25 per cent. on the cost of construction and room occupied by

BOLTING CHESTS.

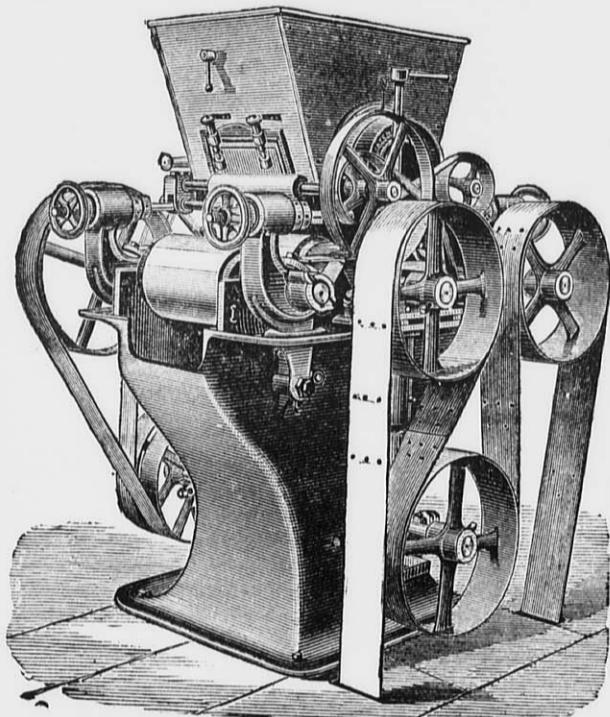
We handle 45 bushels per hour on one reel successfully.  
C. B. SLATER & CO.,  
Blanchester, Ohio.



# EDW. P. ALLIS & CO.

## MILWAUKEE, WISCONSIN.

### MILL BUILDERS AND FURNISHERS,



AND SOLE MANUFACTURERS OF

## GRAY'S PATENT NOISELESS ROLLER MILLS

CORRUGATED AND SMOOTH CHILLED IRON ROLLS,

### Wegmann's Patent Porcelain Roller.

We shall be pleased to hear from Millers contemplating an improvement in their Mills, or Building new ones, and can furnish Estimates and Plans of our system of GRADUAL REDUCTION ROLLER MILLING. We have built and Changed over hundreds of Mills, in all parts of the Country, and using all classes of wheat, BOTH HARD AND SOFT, and can furnish references on application. The Largest and Best Mills of this Country are using our System and Roller Machines. Messrs. C. A. Pillsbury & Co., of Minneapolis, have over 400 PAIRS OF OUR ROLLS AND HAVE RECENTLY PLACED AN ORDER WITH US FOR ABOUT ONE HUNDRED AND TWENTY MORE. We have had a longer and larger experience in Roller Mill Building than any other manufacturers of this country. There is no EXPERIMENT ABOUT OUR SYSTEM and Rolls, so expensive to millers, and when the mills that we build or change over are ready to start, THEY DO SO AND WITH PERFECT SUCCESS, and there is no further changing, additions, stopping or expense. We manufactured and sold during the year 1881 over TWO THOUSAND FIVE HUNDRED pairs of rolls.

We can send competent men to consult with any millers who contemplate an improvement, and whom they can depend upon as being RELIABLE AND THOROUGHLY COMPETENT to advise them as to the number and kind of machines required, best method of placing them and the change required, if any, in the bolting and purifying system. WE DO NOT URGE A GENERAL CLEANING OUT OF ALL OLD MACHINERY unless we clearly see such would be the ONLY COURSE TO PURSUE to make a SATISFACTORY AND RELIABLE MILL. In nearly all instances we can use all the Old Machinery, leaving it in its original position, or with as slight a change as possible. We aim to make the Improvement so that it will be a Profitable one to the Miller, and at the least expense possible.

Our System is THOROUGH and RELIABLE, and our Roller Machine Perfected by Long Experience, and the Miller takes no chances in using them, as HE DOES with the New Fangled Notions of Drive and Adjustment on many other machines now TRYING TO FOLLOW OUR IMPROVEMENTS and still avoid our Patents, in BOTH of which THEY FAIL. We were the first to advocate the Entire Belt Drive, and were opposed by every other maker, who claimed it was not positive, etc., etc., and now that our Belt Drive is an ACKNOWLEDGED SUCCESS, and will SUPERSEDE EVERY OTHER STYLE, these advocates of Gear Drive have suddenly learned that Belts are the Thing. The same may be said of our Spreading Device, Feed Gates, and Adjustable Swing Boxes. Other Makers are now copying these. ALL these Features, including BELT DRIVE with ADJUSTABLE COUNTERSHAFT and TIGHTENER, the SPREADING DEVICE, FEED GATES, Adjustable Swing Boxes and Leveling Devices, Self-Oiling Boxes, etc., are secured to us by several Strong Patents, and we CAUTION MILLERS in regard to these Infringements of Our Patents and Rights, for we shall look to THEM for Redress. The matter is in the hands of our Attorneys, who will soon take VIGOROUS ACTION against the Makers and USERS OF MACHINES infringing Our Patents.

Several machines are already on the market which Broadly Infringe, and we are informed that other makers are now changing their Old Style Machines, and adopting in a large measure Our Improvements. BEWARE OF THEM.

Send for New Illustrated Catalogue, Giving full Information, to

**EDW. P. ALLIS & CO.,**  
MILWAUKEE, WIS.

Branch Office 318 Pine Street, Benson Block, SAN FRANCISCO, CAL.

J. R. GROSS, Manager.

THE

# Gilbert Combination Reduction Roller Mill.

Patented August 22, 1882.

## A COMPLETE SUCCESS!

Six Breaks, Five Scalpers and Elevators, with aspirating after each break, combined in a strong neat Iron Frame. The whole Mill driven by two endless Belts, requiring but two driving pulleys. A Twelve Roller Mill making six reductions as above described, occupies floor space of only 5x8 feet, extreme height to top of feed hopper 9 feet. Complete arrangement for leveling and adjusting the rolls. Every part accessible and as easily operated as an ordinary Four Roller Mill.

### What we Guarantee.

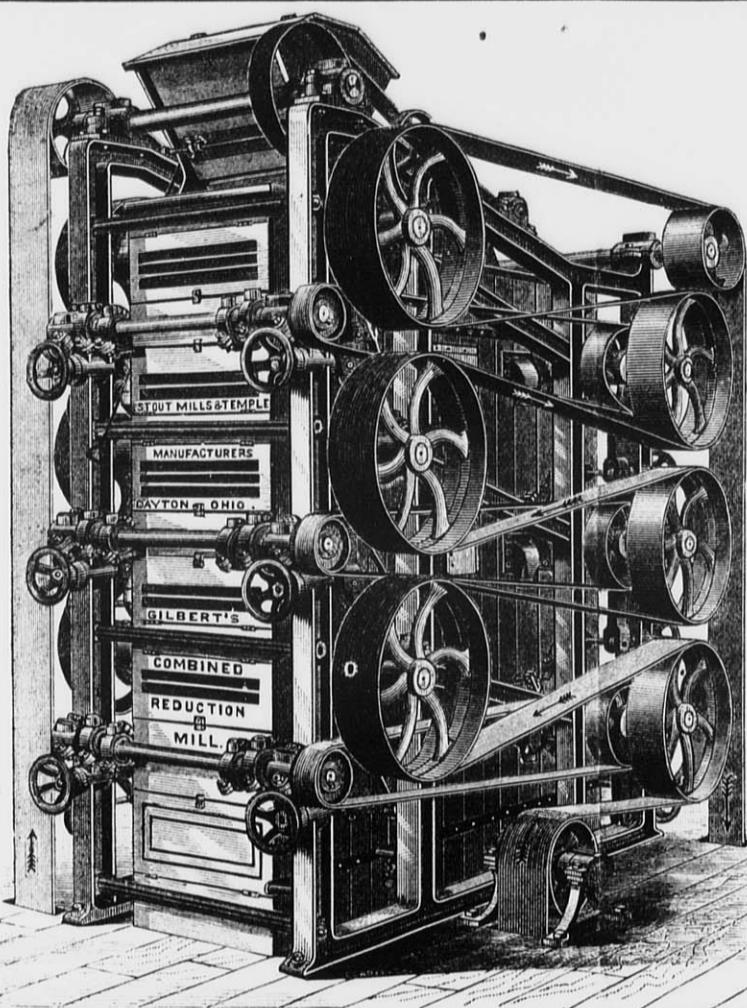
1st. To make large percentage of Middlings and less break-flour than by any other process, because we do away with elevating, conveying and spouting between breaks.

2nd. To scalp cleaner and better than can be done by revolving reels.

3d. Our system of elevating from one pair of break rolls to the other is far preferable, because we elevate but nine inches, and while elevating the scalping is done, which dispenses with scalping reels, elevators and driving machinery for same, thus greatly simplifying the machinery, and saving the power.

4th. We obtain a greater amount of cloth surface in the same space.

5th. The flour and middlings are removed before we apply our suction, consequently do not remove any good stock.



6th. The mill runs smoothly and noiselessly.

7th. The tensions of driving belts are regulated with tightening pulleys, and the mill can be stopped or started at pleasure without interfering with any other portion of the machinery of the mill. These mills meet a want no other mills can meet as they are complete in all their appointments and will do all that any mills can do, and they occupy a very small space. They are adapted to either large or small mills. The space saved is worth the price of the mills. We need not enlarge upon the advantages of the **Gilbert Combination Mills**. We guarantee all we say in reference to them. References and letters of introduction to parties using these mills will be given to any who wish to see them in operation.

Circulars with price lists will be sent on application. Address:

**STOUT, MILLS & TEMPLE,** SOLE MANUFACTURERS,

**DAYTON, OHIO.**

[Please mention the UNITED STATES MILLER when you write to us.]

### Read It! An Immense Success. Read It!

#### OVER 500 MACHINES IN SUCCESSFUL OPERATION.

The only Dust Collector in the market which has been in steady operation over **ONE YEAR**, giving the best of satisfaction. It is an original machine and fully protected by **LETTERS PATENT**. It does not infringe anyone's patent, which we fully guarantee. Beware of infringements. We shall prosecute infringers to the full extent of the law. Bear in mind that all other machines have proved to be failures, therefore take care and buy the only thoroughly tested machine. Try it and satisfy yourselves.

#### FULLY GUARANTEED. NO LONGER AN EXPERIMENT.

No filling up the cloth. All the leading mills are adopting our machines, many having dispensed with the old dust room entirely, operating our **DUST COLLECTORS** exclusively. We refer you to any of the parties using our machines.

#### AN IMPORTANT PROBLEM SOLVED AT LAST.

Taking Care of the dust laden air from middlings purifiers and other machines, using air to carry off the dust, has been thoroughly met and conquered in the highest degree by the

### PRINZ DUST COLLECTOR

After years of study and experiment success crowned the labor of E. PRINZ. He produced a machine that will give satisfaction in such a manner that no miller would ask for anything better.

#### Simplicity is a Leading Feature in this Machine.

The dead air chamber which has been a source of much trouble in other machines by wearing out and allowing the air to get in, thereby injuring the power of the cleaning mechanism on the cloth, which results in the cloth filling up, is entirely overcome in this machine, as it has **NO DEAD AIR CHAMBER**.

#### Machines of Different sizes Built.

Less Power is Used with this Machine than any other, as there is no back pressure on the fan; the motion of the fan has to be reduced whenever this machine is applied. It does away with the cumbersome, dusty, dirty, old-fashioned dust rooms entirely, and the numerous spouts leading to them, which fill up the mill leaving no room to get around.

It Retains the Dust in the Mill, thus allowing no waste of stock by being blown into the air, as is the case with the old-fashioned dust room. It does away with the danger of dust explosions as the air coming from the machine is entirely free from dust, which is not the case with the air coming from any other Dust Collector offered to the milling public heretofore.

We, the undersigned, manufacturers, **Guarantee Entire Satisfaction** in the use of this machine. Read the testimonials below, they speak volumes for the merits of the **Prinz Dust Collector**. Low Prices for Excellent Machines.

Address,

**MILWAUKEE DUST COLLECTOR MFG. CO., Milwaukee, Wis., U. S. A.**

#### Testimonials.

Office of E. P. ALLIS & CO., RELIANCE WORKS, Milwaukee, Wis., Dec 6, 1882.

To the Milwaukee Dust Collector Mfg. Co., Milwaukee, Wis.  
Gentlemen:—I take pleasure in stating that I have seen your Dust Collector in operation, and with my experience with dust collectors, I consider yours the most perfect machine which has come to my knowledge heretofore. I think that it is all any miller can ask for. I have adopted it in mills which I am building.

Yours truly,

W. M. D. GRAY, Expert Millwright,

Dundas, Minn., Aug. 10th, 1882.

MILWAUKEE DUST COLLECTOR MFG. CO.

Gentlemen:—We have been using the Prinz Dust Collector for the past year. We consider the machine a great success. It does its work well at all times.

Very truly,

E. T. ARCHIBALD & CO.

Sparta, Mich., Oct. 18, 1882.

Milwaukee Dust Collector Mfg. Co.

Gentlemen:—We have given the Dust Collector received from you a fair trial and are highly pleased with it. We believe it saves us a barrel of flour a day, (24 hours,) from three run of stones, which will soon pay for it.

Yours respectfully,

SPARTA MILLING CO.

Buffalo, N. Y., Oct 18, 1882.

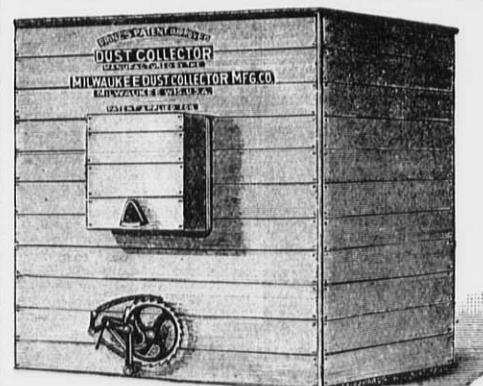
Milwaukee Dust Collector Mfg. Co.

Gentlemen:—Yours of the 6th at hand and noted. We shall want more of your machines as soon as we can get time to put them in, as we regard them a success. In fact they are the best machine of the kind on the market.

Yours,

THORNTON & CHESTER.

No Machine has Stood the Test which Ours has.



This is the only Successful Dust Collector in Operation.

St. Louis, Mo., Oct. 11, 1882.

Milwaukee Dust Collector Mfg. Co., Milwaukee, Wis.  
Gentlemen:—The "Prinz Dust Catcher" on our No. 2 Smith's Purifier has now been in steady Operation for 30 days and works satisfactorily in every way; the machine has no connection with any room and Dust room; the fan blows direct into the mill without any visible signs of dust; it deposits from 75 to 80 pounds in a barrel in 25 hours, being all the refuse matter from the purifier; another machine has arrived; will attach it to a Garden City Purifier and have it in operation in a few days.

Yours respectfully,

HEZEL MILLING CO.

Spring Valley Ohio, Oct. 12, 1882

Milwaukee Dust Collector Mfg. Co.  
Gentlemen:—We have in use one of your Dust Collectors. We are entirely satisfied with its work and would not exchange it for any machine of its class we know of.

Yours respectfully,

BARRETT & SON.

Owensboro, Ky., Sept. 29, 1882.

Milwaukee Dust Collector Mfg. Co.  
Gentlemen:—The machine you shipped us some time ago reached us the forepart of this week and was put in successful operation to-day. It starts off all right and we hope will continue to work well.

Your truly,

W. J. & L. LUMPKIN.

Hastings, Minn., Oct. 19, 1882.

Milwaukee Dust Collector Mfg. Co.  
Gentlemen:—We have now been running your Dust Collector about 10 days and are well pleased with it. If we had room would put in more.

Yours truly,

CHAS. ESPENSCHEID.

**Milwaukee Dust Collector Mfg. Co., Milwaukee, Wis.**

[Please mention the UNITED STATES MILLER when you write to us.]